

AN ULTRAVIOLET MULTIPLET TABLE

COPY 1

Section 1

The Spectra of Hydrogen, Helium, Lithium, Beryllium, Boron, Carbon, Nitrogen, Oxygen, Fluorine, Neon, Sodium, Magnesium, Aluminum, Silicon, Phosphorus, Sulfur, Chlorine, Argon, Potassium, Calcium, Scandium, Titanium, and Vanadium

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Section 2

The Spectra of Chromium, Manganese, Iron, Cobalt, Nickel, Copper, Zinc, Gallium, Germanium, Arsenic, Selenium, Bromine, Krypton, Rubidium, Strontium, Yttrium, Zirconium, and Niobium

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UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS

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UNITED STATES DEPARTMENT OF COMMERCE, Charles Sawyer, Secretary
NATIONAL BUREAU OF STANDARDS, E. U. Condon, Director

AN ULTRAVIOLET MULTIPLET TABLE

The Spectra of Hydrogen, Helium, Lithium, Beryllium,
Boron, Carbon, Nitrogen, Oxygen, Fluorine, Neon, Sodium,
Magnesium, Aluminum, Silicon, Phosphorus, Sulfur,
Chlorine, Argon, Potassium, Calcium, Scandium, Titanium,
and Vanadium

By CHARLOTTE E. MOORE



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Foreword

In 1945, when the manuscript of the Revised Edition of "A Multiplet Table of Astrophysical Interest" (see footnote 1) was being prepared, a violet limit of wavelength near 3000 Å was imposed because the ozone in our atmosphere absorbs radiation of shorter wavelength. At that time, however, the suggestion was made that an extension of the Table to include multiplets in the far ultraviolet was needed. The astrophysical importance of ultraviolet transitions in the spectra of abundant elements in the interpretation of observed nebular and stellar lines was well known from the work of Bowen and others. A further impetus to such a program was provided with the advent of rockets, since it is now possible to observe the solar spectrum in the region of shorter wavelengths. Recently two films that record the solar spectrum to about 2300 Å were recovered from rocket flights, and attempts are being made to extend the observations farther to the violet.

The earlier astrophysical multiplet table has proved to be inadequate to meet present needs, chiefly because of its limited range of wavelength. In order to make more complete data available to those engaged in rocket research, to those working on spectrochemical analysis, and to scientific investigators in other fields, as well as to the astrophysicist, the present ultraviolet extension to it is being prepared.

This work is being done in conjunction with the program on "Atomic Energy Levels." The present Section includes selected spectra of the first 23 elements of the periodic table, H through V, covering the same elements as Volume I of *Atomic Energy Levels* (see footnote 6). Multiplets of 79 spectra are included, but, as before, no attempt has been made to list all known classified lines of each spectrum.

The arrangement of the present Table follows in detail that of the Revised Multiplet Table. Similarly, upon completion of the tabulation of the multiplets, a Finding List will be prepared containing all lines in order of wavelength.

The author of this Table has had the benefit of the expert advice of W. F. Meggers, Chief of the Spectroscopy Section of the Division of Atomic and Radiation Physics, under whose direction the program is being carried on. She has also received cordial collaboration from a number of institutions in making the selection of lines to be included, particularly from the Mt. Wilson and Yerkes Observatories.

WASHINGTON, D. C., April 1950.

E. U. CONDON, *Director.*

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Beryllium	4	Be I.....	5			P II.....	38
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Carbon	6	C I.....	7			S II.....	41
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		C III.....	10			S IV.....	43
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		N III.....	14			Cl II.....	46
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Oxygen	8	O I.....	17	Argon	18	A I.....	48
		O II.....	18			A II.....	48
		O III.....	19			A III.....	50
		O IV.....	20			A IV.....	50
		O V.....	20	Potassium	19	A V.....	51
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		Ne III.....	25	Scandium	21	Ca III.....	55
		Ne IV.....	26			Sc I.....	56
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		Na II.....	27	Titanium	22	Sc III.....	57
Magnesium	12	Mg I.....	28			Sc IV.....	57
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1. Introduction

The ink was scarcely dry on the Revised Multiplet Table¹ published in 1945, when astrophysicists were compelled to extend their spectroscopic horizon to include the ultraviolet solar spectrum, heretofore masked by the ozone in the earth's atmosphere. The present ultraviolet limit of the solar spectrum films taken from a V-2 rocket is near 2300 Å,² and efforts are being made to extend the observations to regions of shorter waves.

During the work on the R M T, however, requests for ultraviolet multiplets were received. The important rôle of selected ultraviolet lines in producing the nebular lines has been fully discussed by Bowen,³ as, for example, the line of He II at 303.7 Å, those of O III at 303.7 Å and 374.4 Å, and the pair at 374.4 Å due to N III. Swings⁴

has commented that "certain forbidden transitions that are not directly observable may play a rôle in astronomy, as, for example, by fluorescence excitation, ionization or dissociation." The astrophysical importance of ultraviolet lines of abundant elements has more recently been stressed by Merrill⁵ and others, whose work illustrates that "peculiarities" in a number of stellar spectra can be attributed to selected ultraviolet transitions. The full significance of these "peculiarities" and the mechanisms that cause them have doubtless not yet been completely realized. For these reasons, and, also, in order to make more complete data available to those working on spectrochemical analysis, the present Ultraviolet Supplement to the R M T is being prepared.

2. Scope of the Ultraviolet Multiplet Table

It is not the purpose of the writer to record here all multiplets involving lines of wavelength shorter than about 3000 Å, the limit of the R M T. The limitation of the Table to lines of astrophysical interest presents a difficult problem of selection from the vast amount of existing data. From the experience gained in the identification of solar lines in the regions of longer wavelength, she has attempted to include all important lines to be expected in a high-dispersion ultraviolet solar spectrum, in addition to those needed to interpret the existing rocket solar films. She has had, also, the benefit of detailed suggestions from I. S. Bowen, P. W. Merrill, and others at the Mount Wilson Observatory. Bowen has generously furnished a list of the strong lines of spectra of elements abundant in the sun and similar stars. This list was made in connection with his study of fluorescence

phenomena in astronomical spectra. It has been a valuable guide in the selection of both the spectra and lines of the lighter elements (H through Ca) to be included in the Table. A preliminary draft of the Table was submitted to the Mount Wilson and Yerkes Observatories for criticism. As a result of comments received some additional lines have been included.

In compiling an Ultraviolet Multiplet Table it is difficult to satisfy the present and future needs of all users. In view of the probable shortcomings of the present Table for those who desire more extensive lists of lines, it is suggested that workers consult the volumes of Atomic Energy Levels.⁶ From this work one can obtain further literature references and also determine for a given spectrum both the positions and the probable percentage of lines omitted.

¹ Contributions from the Princeton University Observatory No. 20 (1945). (Here referred to as R M T.)

² J. J. Hopfield and H. E. Clearman, Jr., Phys. Rev. 72, 877 (1948). E. Durand, J. J. Oberly, and R. Tousey, Astroph. J. 109, 1 (1949).

³ I. S. Bowen, Astroph. J. 81, 1 (1935); Rev. Mod. Phys. 8, No. 2, 55 (1936).

⁴ P. Swings, Letter (May 1945).

⁵ P. W. Merrill, Mt. Wilson Contr. No. 735; Astroph. J. 106, 274 (1947).

⁶ C. E. Moore, Circ. Nat. Bur. Std. 467, Vol. I (1949); Vol. II in press.

3. Arrangement of the Table

The form of arrangement is identical with that of the R M T. Under each spectrum the first line contains the ionization potential; the grade of analysis; the grade denoting the relative number of classified lines included as compared with the total number classified in the ultraviolet; and the date of completion of the manuscript. The limit is also included for three spectra, H, He I, and He II.

The ionization potential is copied from the R M T except for Ar IV and Sc I, where improved values are entered. As in the R M T, the limit in cm^{-1} has been multiplied by the factor 0.00012345 to obtain the tabulated ionization potential, which is expressed in electron volts. Birge's revised conversion factor 0.00012395,⁷ has been used to calculate the ionization potentials recorded in "Atomic Energy Levels", which introduces a discordance in the two publications. For the reasons stated in some detail on page xvi of the R M T, and in spite of this inconsistency, it has appeared advisable to use the same factor in both multiplet tables.

The analyses of atomic spectra have recently been regraded by W. F. Meggers and the writer in connection with the program on the compilation of atomic energy levels. The revised grades are entered in the Ultraviolet Multiplet Table. As before, the grades range from A to E, grade A indicating that the analysis is essentially complete, and grade E that structure has been recognized, but is limited to a single multiplet or transition.

Similar grades are used in the entry "List A, List B, etc." to denote the relative numbers of classified lines listed here as compared with the total number classified in the ultraviolet, A denoting that all classified lines in the ultraviolet are listed, and D that only a few of the leading ones are tabulated.

The present table includes only a limited number of the spectra of the first 23 elements, H through V, 79 in all. Because the work is still in progress, it has been decided to include with each spectrum the references used, rather than to prepare one large bibliography at the end, as was done in the R M T. These references precede the multiplets of each spectrum. The letters on the left, A, B, C, etc. preceding the reference, indicate the source used for the wavelength quoted in the Table; they are repeated in column 2 under "Ref." For the more complex spectra the letters and corresponding references denoting the source are copied from the R M T, as for example in Ti I. Here, all the references listed previously were not needed and are not repeated. Consequently some letters do not appear, since only those references needed for ultraviolet multiplets are repeated.

The references are followed by letters indicating what was taken from each paper for the present compilation. Three types of letters are introduced for this purpose,

⁷ R. T. Birge, Rev. Mod. Phys. 13, No. 4, 237 (1941); Reports on Progress in Physics 8, 131 (1941).

"W L", "I", and "T", denoting, respectively, wavelength, intensity, and terms, the last referring to the analysis of the spectrum. If the intensities from a reference are entered in parentheses in the table, parentheses are used around the "I" following the reference. Those papers used only for analysis or intensity follow the ones used for wavelength, and are not preceded by the letters denoting the source as described above. For example, in C II, Edlén's 1934 paper was first choice for wavelength, as denoted by "A" preceding the reference. Every wavelength taken from this paper has "A" entered in column 2 of the Table. Reference "A" was used for intensity and analysis as well as for wavelength, and consequently is followed by the letters "W L", "I", and "T". The last reference was used only for analysis, as denoted by "T" following the reference.

The columns in the Table are identical with those of the R M T, namely, 1, the laboratory wavelength; 2, the reference from which the wavelength was taken; 3, the estimated intensity of the line; 4 and 5, the low- and high-excitation potentials, respectively; 6, the respective J-values of the low and high levels involved in the production of the line; and, finally, 7, the multiplet designation of the line, complete except for the J-values in column 6.

Column 1, wavelength. With few exceptions these are observed laboratory wavelengths, in standard air for lines longer than 2000 Å, and in vacuum for those of shorter wavelength. For H and He II the positions of the lines calculated from the series have been adopted. J. E. Mack has kindly furnished these data, using term values that take into account the fine structure separation of the $2s\ ^2S_{1/2}$ and $2p\ ^2P_{3/2}$ levels as observed by W. E. Lamb, Jr., R. E. Rutherford, and M. Skinner.⁸ For further details see, Atomic Energy Levels, Volume I.⁹ In O I Edlén's calculated positions are used for the lines from Reference B. As in the R M T, predicted positions are entered for lines that are masked. In such cases the wavelength is preceded by the letter "m". The letter "P" is entered in the Reference column to denote that the position is predicted, and the masking element is named in column 3.

Column 2, reference (discussed above).

Column 3, intensity. When two different intensity scales are used, or when the weaker members of a multiplet have intensities taken from a reference different from that used for the leading lines, the intensity is given in parentheses. All intensities are eye estimates except those of H and of He II. For these two spectra theoretical intensities calculated by J. C. Brennan under the direction of J. E. Mack and F. T. Adler are entered.¹⁰ These computations were made especially for inclusion here, through the kindness of J. E. Mack and his associates.

⁸ W. E. Lamb, Jr. and R. E. Rutherford, Bul. Am. Phys. Soc. 24, No. 1, 59 (1949) (H); M. Skinner and W. E. Lamb, Jr., Bul. Am. Phys. Soc. 24, No. 1, 59 (1949) (He II).

⁹ C. E. Moore, Circ. Nat. Bur. Std. No. 467, Vol. I, 1 (1949).

¹⁰ Letter (April 1949).

Columns 4 and 5, excitation potentials. As in the R M T, all excitation potentials have been calculated by multiplying the level values involved in the transition producing a given line, by the factor 0.00012345, where the levels start with the ground state zero. If the terms of different multiplicities in a given spectrum are not connected by observed intersystem combinations or by good series, parentheses are entered around all excitation potentials in the multiplets involving the terms in question, to indicate that there is an uncertainty in the recorded values.

Columns 6 and 7, J-values and multiplet designations. The last two columns give the complete multiplet designations of the lines, *J*-values being entered in column 6 for convenience, and the rest of the designation in column 7. The number in parentheses under the designation in

column 7 indicates the multiplet number, as in the R M T. These multiplet numbers will appear with each wavelength in the Finding List, which will form the final Section of the Ultraviolet Multiplet Table.

A detailed description of the types of spectroscopic notation used is given in the R M T and also in the Volume I of "Atomic Energy Levels," and will not be repeated here. Only one special type of notation deserves mention. For spectra of the inert gas type (Ne I, Na II, Mg III, A I, K II, Ca III, Sc IV in the present Section) the pair-coupling notation has been substituted for that used by Paschen and others. The Table on page xvii of the R M T and the column giving Paschen's notation in "Atomic Energy Levels" should suffice for cross reference to the earlier kinds of notation used for Ne I-like spectra.

4. Symbols

The symbols adopted here are identical with those used in the R M T (except for the designation of *raie ultime*) as follows:

* preceding the wavelength denotes that the line is a blend. If no symbol follows the wavelength the line is blended with another in the same spectrum. This symbol is also used in the intensity column when the intensity is blended.

§ follows a wavelength (an asterisk always preceding) to denote that a line in the spectrum of the neutral atom of a given element is blended with one in the first spark spectrum of that element.

§§ is a special symbol following the wavelength (an asterisk always preceding) used for blends not covered by the above symbols, and explained in footnotes.

† follows the wavelength of the *raie ultime*. This information has been taken from the papers by Meggers giving the strongest lines of spectra of neutral and singly ionized atoms.¹¹

‡ follows the multiplet designation to call attention to the fact that not all lines observed in the multiplet are listed here.

m precedes the wavelength when the line is masked, as described above.

5. Acknowledgments

In compiling these data the writer has profited greatly by useful suggestions from physicists and astrophysicists. At the Mount Wilson Observatory, I. S. Bowen and P. W. Merrill have consulted their colleagues and formulated very helpful comments regarding the scope and content of the Table. The manuscript has also been submitted to the director of the Yerkes Observatory, where O. Struve and his staff have kindly examined it in advance of publication. J. E. Mack and his collaborators have carried out extensive calculations of intensity data on H and He II. Their efforts to furnish the results especially for inclusion here are greatly appreciated. Special thanks are due W. F. Meggers and C. C. Kiess for their very helpful and authoritative suggestions and cordial collaboration.

The Director of the Bureau, E. U. Condon, has generously supported this large program.

Much of the material has been compiled by Mrs. Isabel D. Murray, whose competence and care are largely responsible for the accuracy in the details of this work. Similar care has been exercised by J. L. Mathusa and his staff in the Publications Section in the troublesome task of publishing these data. The writer records here her grateful thanks to all whose hearty cooperation has made this extensive project possible. As the work progresses she will welcome suggestions from the users of this Table.

¹¹ W. F. Meggers, J. Opt. Soc. Am. 31, 44 (1941) (first spectra); 31, 606 (1941) (singly ionized atoms).

HYDROGEN

H

I P 13.54 Anal A List B April 1949

Limit 109678.758

REFERENCES

A Wavelengths calculated from term values derived by J. E. Mack from the series formula—See *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. I, p. 2 (1949). W L, T

J. G. Brennan, unpublished material (April 1949). (Theoretical intensities calculated under the direction of J. E. Mack and F. T. Adler, for inclusion here. "The unit is micromicrowatts per excited atom")

H

H

IA	Ref	Int	E P		J	Multiplet (No.)	IA	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Vac													
1215. 668‡	A	2047	0.00	10. 15	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S-$ 2p $^2P^o$ (1)	919. 351	A	20	0.00	13. 43	$\frac{1}{2}-$	$1s^2S-11p^2P^o$ (10)
1215. 674	A	1023	0.00	10. 15	$\frac{1}{2}-\frac{1}{2}$								
1025. 722	A	648	0.00	12. 04	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S-$ 3p $^2P^o$ (2)	918. 129	A	16	0.00	13. 45	$\frac{1}{2}-$	$1s^2S-12p^2P^o$ (11)
1025. 723	A	324	0.00	12. 04	$\frac{1}{2}-\frac{1}{2}$								
972. 537	A	{ 278	0.00	12. 69	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S-$ 4p $^2P^o$ (3)	917. 181	A	12	0.00	13. 46	$\frac{1}{2}-$	$1s^2S-13p^2P^o$ (12)
		{ 139	0.00	12. 69	$\frac{1}{2}-\frac{1}{2}$								
949. 743	A	{ 144	0.00	13. 00	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S-$ 5p $^2P^o$ (4)	916. 429	A	10	0.00	13. 47	$\frac{1}{2}-$	$1s^2S-14p^2P^o$ (13)
		{ 72	0.00	13. 00	$\frac{1}{2}-\frac{1}{2}$								
937. 804	A	{ 84	0.00	13. 16	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S-$ 6p $^2P^o$ (5)	915. 824	A	8	0.00	13. 48	$\frac{1}{2}-$	$1s^2S-15p^2P^o$ (14)
		{ 42	0.00	13. 16	$\frac{1}{2}-\frac{1}{2}$								
930. 748	A	{ 53	0.00	13. 26	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S-$ 7p $^2P^o$ (6)	915. 329	A	7	0.00	13. 49	$\frac{1}{2}-$	$1s^2S-16p^2P^o$ (15)
		{ 26	0.00	13. 26	$\frac{1}{2}-\frac{1}{2}$								
926. 226	A	{ 35	0.00	13. 33	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S-$ 8p $^2P^o$ (7)	914. 919	A	6	0.00	13. 49	$\frac{1}{2}-$	$1s^2S-17p^2P^o$ (16)
		{ 18	0.00	13. 33	$\frac{1}{2}-\frac{1}{2}$								
923. 150	A	{ 25	0.00	13. 37	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S-$ 9p $^2P^o$ (8)	914. 576	A	5	0.00	13. 50	$\frac{1}{2}-$	$1s^2S-18p^2P^o$ (17)
		{ 12	0.00	13. 37	$\frac{1}{2}-\frac{1}{2}$								
920. 963	A	27	0.00	13. 40	$\frac{1}{2}-$	$1s^2S-$ 10p $^2P^o$ (9)							

HELIUM

He I

I P 24.48 Anal A List C July 1947

Limit 198305±15

REFERENCES

- A F. Paschen, Sitz. Berlin Akad. Wiss. **30**, 662 (1929). W L, T
 B J. C. Boyce and H. A. Robinson, J. Opt. Soc. Am. **26**, 133 (1936). W L
 C F. Paschen und R. Götze, *Seriengesetze der Linienspektren* p. 28 (Julius Springer, Berlin, 1922). W L,
 (I), T
 T. Lyman, Astroph. J. **60**, 1 (1924). I

He I

He I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 591. 420	A	3	0.00	20.87	0-1	1s ² 1S-2p ¹ P° (1)	Vac 508. 639	B	1	0.00	24.27	0-1	1s ² 1S-8p ¹ P° (8)
584. 331‡	B	10	0.00	21.13	0-1	1s ² 1S-2p ¹ P° (2)	507. 712	B		0.00	24.31	0-1	1s ² 1S-9p ¹ P° (9)
537. 024	B	7	0.00	22.99	0-1	1s ² 1S-3p ¹ P° (3)	507. 053	B		0.00	24.35	0-1	1s ² 1S-10p ¹ P° (10)
522. 208	B	5	0.00	23.64	0-1	1s ² 1S-4p ¹ P° (4)							
515. 612	B	4	0.00	23.94	0-1	1s ² 1S-5p ¹ P° (5)	Air 2945. 104	C	(6)	19.73	23.92	1-	2s ² 1S-5p ³ P° (11)
512. 094	B	3	0.00	24.11	0-1	1s ² 1S-6p ¹ P° (6)	2829. 073	C	(4)	19.73	24.10	1-	2s ² 1S-6p ³ P° (12)
509. 993	B	2	0.00	24.21	0-1	1s ² 1S-7p ¹ P° (7)							

He II

IP 54.17 Anal A List B April 1949

Limit 438908.670

REFERENCES

A Wavelengths calculated from term values derived by J. E. Mack from the series formula—See *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. I p. 7 (1949). W L T
 J. G. Brennan, unpublished material (April 1949). (Theoretical intensities calculated under the direction of J. E. Mack and F. T. Adler, for inclusion here. "The unit is micromicrowatts per excited atom")

He II

He II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
303. 781†	A	32753	0.00	40.64	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 2p^2P^o$	229. 431	A	{ 168	0.00	53.81	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 12p^2P^o$
303. 786	A	16376	0.00	40.64	$\frac{1}{2}-\frac{1}{2}$	(1)		84	0.00	53.81	$\frac{1}{2}-\frac{1}{2}$		(11)
256. 317	A	10363	0.00	48.16	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 3p^2P^o$							
256. 318	A	5182	0.00	48.16	$\frac{1}{2}-\frac{1}{2}$	(2)							
243. 027	A	{ 4456	0.00	50.80	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 4p^2P^o$	1640. 474	A	939	40.64	48.16	$\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 3d^2D$
		{ 2228	0.00	50.80	$\frac{1}{2}-\frac{1}{2}$	(3)	1640. 332	A	522	40.64	48.16	$\frac{1}{2}-\frac{1}{2}$	
							1640. 490	A	104	40.64	48.16	$\frac{1}{2}-1\frac{1}{2}$	
237. 331	A	{ 2300	0.00	52.02	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 5p^2P^o$	1215. 171	A	404	40.64	50.80	$\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 4d^2D$
		{ 1150	0.00	52.02	$\frac{1}{2}-\frac{1}{2}$	(4)	1215. 088	A	225	40.64	50.80	$\frac{1}{2}-\frac{1}{2}$	
							1215. 175	A	45	40.64	50.80	$\frac{1}{2}-1\frac{1}{2}$	
234. 347	A	{ 1337	0.00	52.68	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 6p^2P^o$	1084. 975	A	207	40.64	52.02	$\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 5d^2D$
		{ 668	0.00	52.68	$\frac{1}{2}-\frac{1}{2}$	(5)	1084. 908	A	115	40.64	52.02	$\frac{1}{2}-\frac{1}{2}$	
232. 584	A	{ 844	0.00	53.08	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 7p^2P^o$	1025. 302	A	120	40.64	52.68	$\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 6d^2D$
		{ 422	0.00	53.08	$\frac{1}{2}-\frac{1}{2}$	(6)	1025. 241	A	66	40.64	52.68	$\frac{1}{2}-1\frac{1}{2}$	
231. 454	A	{ 566	0.00	53.34	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 8p^2P^o$	992. 391	A	75	40.64	53.08	$\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 7d^2D$
		{ 283	0.00	53.34	$\frac{1}{2}-\frac{1}{2}$	(7)	992. 334	A	42	40.64	53.08	$\frac{1}{2}-1\frac{1}{2}$	
230. 686	A	{ 398	0.00	53.51	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 9p^2P^o$	972. 138	A	50	40.64	53.34	$\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 8d^2D$
		{ 199	0.00	53.51	$\frac{1}{2}-\frac{1}{2}$	(8)	972. 083	A	28	40.64	53.34	$\frac{1}{2}-1\frac{1}{2}$	
230. 139	A	{ 291	0.00	53.64	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 10p^2P^o$	958. 724	A	35	40.64	53.51	$\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 9d^2D$
		{ 145	0.00	53.64	$\frac{1}{2}-\frac{1}{2}$	(9)	958. 671	A	20	40.64	53.51	$\frac{1}{2}-1\frac{1}{2}$	
229. 736	A	{ 218	0.00	53.74	$\frac{1}{2}-1\frac{1}{2}$	$1s^2S - 11p^2P^o$	949. 354	A	26	40.64	53.64	$\frac{1}{2}-2\frac{1}{2}$	$2p^2P^o - 10d^2D$
		{ 109	0.00	53.74	$\frac{1}{2}-\frac{1}{2}$	(10)	949. 301	A	14	40.64	53.64	$\frac{1}{2}-1\frac{1}{2}$	

LITHIUM

Li I

IP 5.37 Anal A List D Aug. 1947

REFERENCES

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 H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 185
 (Julius Springer, Berlin, 1939). I

Li I

IA	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2741. 204	A	10R	0.00	4.50	$\frac{1}{2}-$	$2s^2S - 4p^2P^o$ (1)
2562. 312	A	5R	0.00	4.82	$\frac{1}{2}-$	$2s^2S - 5p^2P^o$ (2)
2475. 061	A	4R	0.00	4.99	$\frac{1}{2}-$	$2s^2S - 6p^2P^o$ (3)
2425. 426	A	3R	0.00	5.09	$\frac{1}{2}-$	$2s^2S - 7p^2P^o$ (4)
2394. 386	A	1R	0.00	5.15	$\frac{1}{2}-$	$2s^2S - 8p^2P^o$ (5)

Li II

IP 75.31 Anal B List D Aug. 1947

REFERENCES

- A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 31 (1934). W L, T
 B. Werner, *Dissertation*, p. 60 (H. Aschehoug & Co., Dansk. Forlag, Kobenhavn, 1927). W L, I, T
 H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 267,
 268 (Julius Springer, Berlin, 1939). I

Li II

IA	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 199. 282‡	A	3	0.00	61.95	0-1	$1s^2^1S - 2p^1P^o$ (1)
178. 015	A	1	0.00	69.35	0-1	$1s^2^1S - 3p^1P^o$ (2)
171. 582	A	1	0.00	71.95	0-1	$1s^2^1S - 4p^1P^o$ (3)
Air 2674. 4			68.48	73.10	1-	$3s^2^1S - 5p^1P^o$ (4)

BERYLLIUM

Be I

I P 9.28 Anal A List C Aug. 1947

REFERENCES

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 B F. Paschen und P. G. Kruger, Ann. der Phys. [5] 8, 1011 (1931). W L, I, T

Be I

IA	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2348. 612†	A	50	0.00	5.25	0-1	$2s^2 \ ^1S - 2p \ ^1P^o$ (1)
2650. 636	B	10	2.71	7.37	2-2	$2p \ ^1P^o - 2p^2 \ ^3P^{\dagger}$ (2)
2650. 613	B	8	2.71	7.37	1-1	
2650. 779	B	10	2.71	7.37	2-1	
2650. 470	B	10	2.71	7.37	1-2	
2494. 735	B	20	2.71	7.66	2-	$2p \ ^1P^o - 3d \ ^3D$ (3)
2494. 590	B	12	2.71	7.66	1-1, 2	
2494. 547	B	8	2.71	7.66	0-1	
2986. 09	B	10	6.43	10.56	1-2	$3s \ ^2S - 3s \ ^3P^o$ (4)

Be II

I P 18.13 Anal A List D Aug. 1947

REFERENCES

- A N. Wagman, Univ. Pittsburgh Bul. 34, No. 1, 9 (1937). W L
 B I. S. Bowen and R. A. Millikan, Phys. Rev. 28, 256 (1926). W L, I, T
 F. Paschen and P. G. Kruger, Ann. der Phys. [5] 8, 1014 (1931). I, T

Be II

IA	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1036. 271	A	8	0.00	11.91	$\frac{1}{2} - 1\frac{1}{2}$	$2s \ ^2S - 3p \ ^2P^o$ (1)
842. 057	A	7	0.00	14.66	$\frac{1}{2} -$	$2s \ ^2S - 4p \ ^2P^o$ (2)
1776. 339	B	8	3.94	10.89	$1\frac{1}{2} - \frac{1}{2}$	$2p \ ^2P^o - 3s \ ^2S$ (3)
1776. 118	B	6	3.94	10.89	$\frac{1}{2} - \frac{1}{2}$	
1512. 451	B	10	3.94	12.10	$1\frac{1}{2} -$	$2p \ ^2P^o - 3d \ ^3D$ (4)
1512. 303	B	8	3.94	12.10	$\frac{1}{2} - 1\frac{1}{2}$	
1197. 19	A	10	3.94	14.25	$1\frac{1}{2} - \frac{1}{2}$	$2p \ ^2P^o - 4s \ ^2S$ (5)
Air 2453. 89	A	3	10.89	15.92	$\frac{1}{2} -$	$3s \ ^2S - 5p \ ^2P^o$ (6)
2728. 83	A	4	12.10	16.63		$3d \ ^2D - 6f \ ^2F^o$ (7)

BORON

B I

I P 8.26 Anal B List D Aug. 1947

REFERENCES

- A N. E. Wagman, Bul. Univ. Pittsburgh **34**, No. 1, 9 (1937). W L
 B E. W. H. Selwyn, Proc. Phys. Soc. (London) **41**, 401 (1929). W L, (I), T
 C H. E. Clearman, Jr., unpublished material (Aug. 1947). W L, (I), T
 A. Fowler, *Report on Series in Line Spectra* p. 155 (Fleetway Press, London, 1922.) I

B I

IA	Ref	Int	EP		J	Multiplet (No)
			Low	High		
Air 2497. 724‡ 2496. 773	A A	10R 8R	0.00 0.00	4.94 4.94	1½ - ½ ½ - ½	2p ¹ P° - 3s ¹ S (1)
2089. 57 2088. 84	B B	(10n) (9n)	0.00 0.00	5.91 5.91	1½ - 2½ ½ - 1½	2p ¹ P° - 2p ³ D (2)
Vac 1826. 40 1825. 89	C C	(20h) (15h)	0.00 0.00	6.76 6.76	1½ - 2½ ½ - 1½	2p ¹ P° - 3d ³ D (3)

B II

I P 25.02 Anal B List D Aug. 1947

REFERENCES

- A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 6, 51 (1934). W L, I, T
 B. Edlén, Zeit. Phys. **98**, 561 (1936). T

B II

IA	Ref	Int	EP		J	Multiplet (No)
			Low	High		
Vac 1362. 460‡	A	5	0.00	9.06	0-1	2s ² ¹ S - 2p ¹ P° (1)
693. 952	A	2	0.00	17.79	0-1	2s ² ¹ S - 3p ¹ P° (2)
*1623. 99	A	5	4.61	12.21	{ 2-2 1-1 } 2p ¹ P° - 2p ⁴ ³ P† (3)	
1624. 37	A	4	4.61	12.21	2-1	
1623. 57	A	4	4.61	12.21	1-2	
Air 2395. 06	A	5	12.64	17.79	2-1	2p ³ ¹ D - 3p ¹ P° (4)

CI—Continued

CI—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1139. 894	B	7	0. 01	10. 84	2-3	$2p^2 \ ^1P - 6d \ ^3D^o$ (22)	1315. 903	B	4	1. 26	10. 64	2-2	$2p^2 \ ^1D - 5d \ ^1D^o$ (44)
1139. 794	B	6	0. 00	10. 83	1-2		1313. 471	B	6	1. 26	10. 66	2-3	$2p^2 \ ^1D - 5d \ ^3F^o?$ (45)
1140. 070	B	1	0. 01	10. 83	2-2		1312. 261	B	2	1. 26	10. 67	2-3	$2p^2 \ ^1D - 5d \ ^3D^o$ (46)
1139. 142	B	2	0. 01	10. 84	2-2	$2p^2 \ ^1P - 6d \ ^3P^o?$ (23)	1311. 985	B	2	1. 26	10. 67	2-1	$2p^2 \ ^1D - 6s \ ^1P^o$ (47)
1138. 625	B	1	0. 00	10. 84	1-1		1311. 374	B	8	1. 26	10. 67	2-3	$2p^2 \ ^1D - 5d \ ^1F^o$ (48)
1139. 037	B	1	0. 01	10. 84	2-1		1310. 646	B	4	1. 26	10. 68	2-1	$2p^2 \ ^1D - 5d \ ^1P^o$ (49)
1129. 927	B	1	0. 01	10. 93	2-3	$2p^2 \ ^1P - 7d \ ^3F^o$ (24)	1291. 380	B	1	1. 26	10. 82	2-2	$2p^2 \ ^1D - 6d \ ^1D^o$ (50)
1129. 626	B	1	0. 00	10. 93	1-2		1289. 983	B	3	1. 26	10. 83	2-3	$2p^2 \ ^1D - 6d \ ^3F^o$ (51)
1129. 161	B	6	0. 01	10. 94	2-3	$2p^2 \ ^1P - 7d \ ^3D^o$ (25)	1288. 633	B	2	1. 26	10. 84	2-1	$2p^2 \ ^1D - 7s \ ^1P^o$ (52)
1128. 748	B	1	0. 01	10. 94	2-2	$2p^2 \ ^1P - 7d \ ^3P^o$ (26)	1288. 445	B	5	1. 26	10. 84	2-3	$2p^2 \ ^1D - 6d \ ^1F^o$ (53)
1122. 325	B	4	0. 01	11. 01	2-3	$2p^2 \ ^1P - 8d \ ^3D^o$ (27)	1288. 055	B	1	1. 26	10. 84	2-1	$2p^2 \ ^1D - 6d \ ^1P^o$ (54)
1122. 179	B	1	0. 01	11. 01	2-2	$2p^2 \ ^1P - 8d \ ^3P^o$ (28)	1275. 021	B	5	1. 26	10. 94	2-3	$2p^2 \ ^1D - 7d \ ^1F^o$ (55)
1117. 706	B	3	0. 01	11. 05	2-3	$2p^2 \ ^1P - 9d \ ^3D^o$ (29)	1274. 880	B	2	1. 26	10. 94	2-1	$2p^2 \ ^1D - 7d \ ^1P^o$ (56)
1114. 414	B	2	0. 01	11. 08	2-3	$2p^2 \ ^1P - 10d \ ^3D^o$ (30)	1267. 633	B	1	1. 26	11. 00	2-	$2p^2 \ ^1D - 8d \ ^3F^o$ (57)
945. 566	D	(3)	0. 01	13. 06	2-1	$2p^2 \ ^1P - 2p^3 \ ^1S^o$ (31)	1266. 449	B	3	1. 26	11. 01	2-3	$2p^2 \ ^1D - 8d \ ^1F^o$ (58)
945. 336	D	(2)	0. 00	13. 06	1-1		1260. 670	B	2	1. 26	11. 05	2-3	$2p^2 \ ^1D - 9d \ ^1F^o$ (59)
945. 193	D	(1)	0. 00	13. 06	0-1		Air						
1993. 65	E	2	1. 26	7. 45	2-1	$2p^2 \ ^1D - 3s \ ^3P^o$ (32)	2582. 901	A	5	2. 67	7. 45	0-1	$2p^2 \ ^1S - 3s \ ^1P^o$ (60)
1930. 930	B	10	1. 26	7. 65	2-1	$2p^2 \ ^1D - 3s \ ^1P^o$ (33)	2478. 556	F	10	2. 67	7. 65	0-1	$2p^2 \ ^1S - 3s \ ^1P^o$ (61)
1481. 771	B	7	1. 26	9. 59	2-2	$2p^2 \ ^1D - 3d \ ^3D^o$ (34)	1364. 140	B	8	2. 67	9. 72	0-1	$2p^2 \ ^1S - 3d \ ^1P^o$ (62)
1470. 20	E	1	1. 26	9. 66	2-3	$2p^2 \ ^1D - 3d \ ^3F^o$ (35)	1359. 329	B	5	2. 67	10. 37	0-1	$2p^2 \ ^1S - 4d \ ^1P^o$ (63)
1467. 450	B	3	1. 26	9. 67	2-1	$2p^2 \ ^1D - 4s \ ^1P^o$ (36)	1357. 058	B	2	2. 67	10. 68	0-1	$2p^2 \ ^1S - 5d \ ^1P^o$ (64)
1463. 328	B	6	1. 26	9. 69	2-3	$2p^2 \ ^1D - 3d \ ^3F^o$ (37)	1355. 825	B	6	1. 26	10. 36	2-3	$2p^2 \ ^1D - 4d \ ^3F^o$ (42)
1459. 054	B	2	1. 26	9. 72	2-1	$2p^2 \ ^1D - 3d \ ^1P^o$ (38)	1354. 286	D	(0)	1. 26	10. 37	2-1	$2p^2 \ ^1S - 3s \ ^1P^o$ (65)
1364. 140	B	6	1. 26	10. 31	2-2	$2p^2 \ ^1D - 4d \ ^3D^o$ (39)	1431. 595	A	20	4. 16	12. 79	2-3	
1359. 329	B	2	1. 26	10. 34	2-3	$2p^2 \ ^1D - 4d \ ^3F^o$ (40)	1432. 115	A	15	4. 16	12. 78	2-2	
1357. 058	B	3	1. 26	10. 36	2-1	$2p^2 \ ^1D - 5s \ ^1P^o$ (41)	1432. 538	A	10	4. 16	12. 78	2-1	
1355. 825	B	6	1. 26	10. 36	2-3	$2p^2 \ ^1D - 4d \ ^3F^o$ (42)							
1354. 286	D	(0)	1. 26	10. 37	2-1	$2p^2 \ ^1D - 4d \ ^1P^o$ (43)							

C II

I P 24.28 Anal A List C Sept. 1947

REFERENCES

- A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 74 (1934). W L, I, T
 B A. Fowler and E. W. H. Selwyn, Proc. Roy. Soc. London [A] 120, 312 (1928). W L, T
 B. Edlén, Zeit. Phys. 98, 561 (1936). T

C II

C II

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1335. 684‡	A	14	0. 01	9. 25	1½ - 2½	2p ² P° - 2p ² ² D	651. 342	A	8	5. 31	24. 27	2½ - 3½	2p ² ⁴ P - 3d ⁴ D° (9)
1334. 515	A	13	0. 00	9. 25	½ - 1½	(1)	*651. 262	A	7	5. 31	24. 27	1½ - 2½	
1037. 017	A	13	0. 01	11. 91	1½ - ½	2p ² P° - 2p ² ² S	*651. 216	A	7	5. 31	24. 27	½ - 1½	
1036. 330	A	12	0. 00	11. 91	½ - ½	(2)	*651. 262	A	7	5. 31	24. 27	1½ - 1½	
904. 134	A	12	0. 01	13. 66	1½ - 1½	2p ² P° - 2p ² ² P	*651. 216	A	7	5. 31	24. 26	½ - ½	
903. 950	A	11	0. 00	13. 66	½ - ½	(3)							
904. 468	A	10	0. 01	13. 66	½ - ½		1760. 40	A	4	9. 25	16. 26	2½ - 1½	2p ² ³ D - 3p ³ P° (10)
903. 609	A	10	0. 00	13. 66	½ - ½		1760. 81	A	3	9. 25	16. 26	1½ - ½	
858. 561	A	9	0. 01	14. 39	1½ - ½	2p ² P° - 3s ² S	1323. 916	A	8	9. 25	18. 57		2p ² ³ D - 2p ² ³ D° (11)
858. 094	A	8	0. 00	14. 39	½ - ½	(4)							
687. 355	A	11	0. 01	17. 97	1½ - 2½	2p ² P° - 3d ³ D	1065. 883	A	7	9. 25	20. 83	2½ - 1½	2p ² ³ D - 2p ² ³ P° (12)
687. 059	A	10	0. 00	17. 97	½ - 1½	(5)	1066. 121	A	6	9. 25	20. 83	1½ - ½	
595. 032	A	7d	0. 01	20. 75	1½ - 2½	2p ² P° - 4d ³ D							
594. 808	A	6d	0. 00	20. 75	½ - 1½	(6)	Air						
							2836. 710	B	8	11. 91	16. 26	½ - 1½	2p ² ³ S - 3p ³ P° (13)
							2837. 602	B	7	11. 91	16. 26	½ - ½	
1010. 369	A	10	5. 31	17. 53	2½ - 1½	2p ² ⁴ P - 2p ³ ⁴ S°							
1010. 074	A	10	5. 31	17. 53	1½ - 1½	(7)							
1009. 854	A	9	5. 31	17. 53	½ - ½		2512. 03	B	10	13. 66	18. 57	1½ - 2½	2p ² ³ P - 2p ³ ³ D° (14)
*806. 555	A	7	5. 31	20. 62	2½ - 2½	2p ² ⁴ P - 3s ⁴ P°	2509. 11	B	9	13. 66	18. 58	½ - 1½	
*806. 684	A	4	{ 5. 31	20. 61	1½ - 1½	(8)	2511. 71	B	7	13. 66	18. 58	1½ - 1½	
*806. 846	A	6	{ 5. 31	20. 61	2½ - 1½								
806. 384	A	5	{ 5. 31	20. 62	1½ - 2½		2747. 31	B	6	16. 26	20. 75	1½ - 2½	3p ³ P° - 4d ³ D
*806. 555	A	7	{ 5. 31	20. 61	½ - 1½		2746. 50	B	5	16. 26	20. 75	½ - 1½	(15)

CIII

I P 47.67 Anal A List C Sept. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 55 (1934). W L, I, T

C IV

IP 64.22 Anal A List C Sept. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Upsaliensis [IV]
 9, No. 6, 41 (1934). W L, I, T

C IV

C IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1548.195	A	20	0.00	7.97	$\frac{1}{2}-\frac{1}{2}$	$2s - 2p \ ^1P^o$ (1)	289.230	A	10	7.97	50.66	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 4d \ ^3D$ (9)
1550.768	A	19	0.00	7.96	$\frac{1}{2}-\frac{1}{2}$	$2s - 2p \ ^1P^o$ (1)	289.143	A	9	7.96	50.66	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 4d \ ^3D$ (9)
312.418	A	15	0.00	39.51	$\frac{1}{2}-\frac{1}{2}$	$2s - 3p \ ^1P^o$ (2)	259.542	A	7	7.97	55.54	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 5d \ ^3D$ (10)
312.455	A	14	0.00	39.51	$\frac{1}{2}-\frac{1}{2}$	$2s - 3p \ ^1P^o$ (2)	259.471	A	6	7.96	55.54	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 5d \ ^3D$ (10)
244.907	A	10	0.00	50.41	$\frac{1}{2}-$	$2s - 4p \ ^1P^o$ (3)	245.830	A	5d	7.97	58.19	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 6d \ ^3D$ (11)
222.791	A	7	0.00	55.41	$\frac{1}{2}-$	$2s - 5p \ ^1P^o$ (4)	245.775	A	4d	7.96	58.19	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 6d \ ^3D$ (11)
212.421	A	5	0.00	58.12	$\frac{1}{2}-$	$2s - 6p \ ^1P^o$ (5)							
							Air						
419.714	A	14	7.97	37.39	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 3s \ ^1S$ (6)	2698.70	A	3	50.41	54.98	$\frac{1}{2}-\frac{1}{2}$	$4p \ ^1P^o - 5s \ ^1S$ (12)
419.525	A	13	7.96	37.39	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 3s \ ^1S$ (6)	2697.73	A	2	50.41	54.98	$\frac{1}{2}-\frac{1}{2}$	$4p \ ^1P^o - 5s \ ^1S$ (12)
384.178	A	17	7.97	40.11	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 3d \ ^3D$ (7)	2524.40	A	4d	50.66	55.54		$4d \ ^3D - 5p \ ^3P^o$ (13)
384.032	A	16	7.96	40.11	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 3d \ ^3D$ (7)							$4d \ ^3D - 5p \ ^3P^o$ (13)
296.951	A	7	7.97	49.55	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 4s \ ^1S$ (8)	2529.97	A	6d	50.67	55.55		$4f \ ^3F^o - 5g \ ^3G$ (15)
296.857	A	6	7.96	49.55	$\frac{1}{2}-\frac{1}{2}$	$2p \ ^1P^o - 4s \ ^1S$ (8)							$4f \ ^3F^o - 5g \ ^3G$ (15)

NITROGEN

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IP 14.49 Anal A List D Oct. 1947

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36, No. 933, 375 (1939). I, T

NI

NI

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1199. 550	A	6	0.00	10.29	1½ - 2½	2p ³ 4S° - 3s 4P	1163. 870	A	9	2.37	12.98	- 2½	2p ³ 4D° - 3d 4D†
1200. 218	A	10	0.00	10.29	1½ - 1½	(1)	1164. 314	A	9	2.37	12.98	- 1½	(7)
1200. 707	A	10	0.00	10.28	1½ - ½								
1134. 979‡	A	10	0.00	10.88	1½ - 2½	2p ³ 4S° - 2p ⁴ 4P	1836. 739	E	4	3.56	10.28	- ½	2p ³ 4P° - 3s 4P
1134. 417	A	10	0.00	10.88	1½ - 1½	(2)							
1134. 168	A	10	0.00	10.88	1½ - ½								
963. 93	B	10	0.00	12.81	1½ - 2½	2p ³ 4S° - 4s 4P	1742. 734	C	10	3.56	10.64	- 1½	2p ³ 4P° - 3s 4P
964. 57	B	10	0.00	12.80	1½ - 1½	(3)	1745. 246	C	10	3.56	10.63	- ½	(9)
965. 07	B	10	0.00	12.79	1½ - ½		1411. 937	C	10	3.56	12.30		2p ³ 4P° - 3s' 4D
													(10)
1492. 630	C	10	2.37	10.64	- 1½	2p ³ 4D° - 3s 4P	1326. 629	D	10	3.56	12.87	- 1½	2p ³ 4P° - 4s 4P
1494. 669	C	10	2.37	10.63	1½ - ½	(4)	1327. 960	D	10	3.56	12.86	- ½	(11)
1243. 170	C	8	2.37	12.30	- 2½	2p ³ 4D° - 3s' 4D	1319. 717	E	8	3.56	12.91	- 1½	2p ³ 4P° - 3d 4P
1243. 297	C	8	2.37	12.30	- 1½	(5)	1319. 039	E	8	3.56	12.92	- ½	(12)
1167. 442	A	8	2.37	12.95	2½ - 3½	2p ³ 4D° - 3d 4F†	1310. 569	D	10	3.56	12.98	1½ - 2½	2p ³ 4P° - 3d 4D
1168. 477	D	8	2.37	12.94	- 2½	(6)	1310. 967	D	10	3.56	12.98	- 1½	(13)

N II

IP 29.49 Anal A List C Oct. 1947

REFERENCES

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 B A. Fowler and L. J. Freeman, Proc. Roy. Soc. London [A] 114, 662 (1927). W L, I, T
 C L. J. Freeman, Proc. Roy. Soc. London [A] 124, 654 (1929). W L, I, T
 B. Edlén, Zeit. Phys. 98, 561 (1936). T

N II

N II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1085. 699†	A	12	0.02	11. 39	2-3	$2p^2 \ ^3P - 2p^2 \ ^3D^o$ (1)	574. 650	A	6	1. 89	23. 37	2-3	$2p^3 \ ^1D - 3d \ ^1F^o$ (11)
*1084. 568	A	11	0.01	11. 39	1-2								
1083. 977	A	10	0.00	11. 39	0-1								
1085. 536	A	10	0.02	11. 39	2-2								
*1084. 568	A	11	0.01	11. 39	1-1								
*916. 700	A	12	0.02	13. 48	2-2	$2p^2 \ ^3P - 2p^2 \ ^3P^o$ (2)	745. 836	A	6	4. 04	20. 59	0-1	$2p^3 \ ^1S - 2p^3 \ ^1P^o$ (12)
*916. 004	A	11	0.01	13. 48	1-1								
*916. 700	A	12	0.02	13. 48	2-1								
915. 955	A	10	0.01	13. 48	1-0								
*916. 004	A	11	0.01	13. 48	1-2								
915. 603	A	10	0.00	13. 48	0-1								
*671. 391	A	8	0.02	18. 40	2-2	$2p^2 \ ^3P - 3s \ ^1P^o$ (3)	1886. 82	C	4	18. 42	24. 96	1-1	$3s \ ^1P^o - 4p \ ^1P$ (14)
671. 629	A	6	0.01	18. 39	1-1								
671. 999	A	6	0.02	18. 39	2-1								
671. 770	A	6	0.01	18. 38	1-0								
671. 014	A	6	0.01	18. 40	1-2								
*671. 391	A	8	0.00	18. 39	0-1								
645. 167	A	10	0.02	19. 15	2-1	$2p^3 \ ^1P - 2p^3 \ ^1S^o$ (4)	2317. 01	C	5	20. 58	25. 90	3-4	$3p \ ^1D - 4d \ ^1F^o$ (16)
644. 825	A	9	0.01	19. 15	1-1								
644. 621	A	8	0.00	19. 15	0-1								
533. 726	A	6	0.02	23. 15	2-3	$2p^2 \ ^3P - 3d \ ^1D^o$ (5)	2823. 67	B	4	20. 59	24. 96	1-1	$2p^3 \ ^1P^o - 4p \ ^1P$ (17)
533. 577	A	5	0.01	23. 14	1-2								
533. 504	A	4	0.00	23. 14	0-1								
533. 809	A	4	0.02	23. 14	2-2								
533. 644	A	4	0.01	23. 14	1-1								
529. 860	A	5	0.02	23. 31	2-2	$2p^2 \ ^3P - 3d \ ^1P^o$ (6)	2590. 91	B	4	20. 59	25. 35	1-2	$2p^3 \ ^1P^o - 4p \ ^1D$ (18)
529. 481	A	3	0.01	23. 32	1-1								
529. 713	A	3	0.02	23. 32	2-1								
529. 405	A	3	0.01	23. 32	1-0								
529. 627	A	3	0.01	23. 31	1-2								
529. 343	A	3	0.00	23. 32	0-1								
775. 957	A	12	1. 89	17. 80	2-2	$2p^2 \ ^1D - 2p^2 \ ^1D^o$ (7)							
746. 976	A	8	1. 89	18. 42	2-1	$2p^2 \ ^1D - 3s \ ^1P^o$ (8)	2799. 20	B	4	21. 51	25. 92	2-2	$3p \ ^1D - 4d \ ^1D^o$ (21)
660. 280	A	9	1. 89	20. 59	2-1	$2p^2 \ ^1D - 2p^2 \ ^1P^o$ (9)	2709. 82	B	6	21. 51	26. 06	2-3	$3p \ ^1D - 4d \ ^1F^o$ (22)
582. 150	A	5	1. 89	23. 10	2-2	$2p^2 \ ^1D - 3d \ ^1D^o$ (10)	2461. 30	B	3	21. 51	26. 52	2-1	$3p \ ^1D - 5s \ ^1P^o$ (23)

N III

IP 47.24 Anal A List C Oct. 1947

REFERENCES

- A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 85 (1934). W L, I, T
 B L. J. Freeman, Proc. Roy. Soc. London [A] 121, 318 (1928). W L, (I), T
 C B. Edlén, Zeit. Phys. 98, 561 (1936). W L, I, T

N III

N III

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
991. 579	A	17	0.02	12. 47	1½ - 2½	2p ¹ P° - 2p ³ ¹ D (1)	434. 066	A	7	7. 08	35. 52	2½ - 2½	2p ³ ¹ P - 3s ¹ P° (9)
989. 790	A	16	0.00	12. 47	½ - 1½		*434. 129	A	5	7. 07	35. 50	1½ - 1½	
991. 514	A	14	0.02	12. 47	1½ - 1½		434. 280	A	6	7. 08	35. 50	2½ - 1½	
764. 357	A	15	0.02	16. 17	1½ - ½	2p ¹ P° - 2p ³ ¹ S (2)	434. 246	A	6	7. 07	35. 50	1½ - ½	
763. 340	A	14	0.00	16. 17	½ - ½		433. 911	A	6	7. 07	35. 52	1½ - 2½	
685. 816	A	16	0.02	18. 02	1½ - 1½	2p ¹ P° - 2p ³ ¹ P (3)	434. 014	A	6	7. 06	35. 50	½ - 1½	
685. 513	A	15	0.00	18. 01	½ - ½		362. 946	A	8	7. 08	41. 09	2½ - 3½	2p ³ ¹ P - 3d ¹ D° (10)
686. 335	A	14	0.02	18. 01	1½ - ½		*362. 881	A	8	7. 07	41. 09	1½ - 2½	
684. 996	A	14	0.00	18. 02	½ - 1½		*362. 833	A	7	7. 06	41. 09	½ - 1½	
452. 226	A	11	0.02	27. 32	1½ - ½	2p ¹ P° - 3s ¹ S (4)	362. 985	A	6	7. 08	41. 09	2½ - 2½	
451. 869	A	10	0.00	27. 32	½ - ½		*362. 881	A	8	7. 07	41. 09	1½ - 1½	
374. 441	A	12	0.02	32. 99	1½ - 2½	2p ¹ P° - 3d ¹ D (5)	*362. 833	A	7	7. 06	41. 08	½ - ½	
374. 204	A	11	0.00	32. 99	½ - 1½		358. 578	A	6	7. 08	41. 51	2½ - 2½	2p ³ ¹ P - 3d ¹ D° (11)
323. 615	A	6	0.02	38. 17	1½ - 1½	2p ¹ P° - 3p ³ ¹ P (6)	358. 401	A	3	7. 07	41. 51	1½ - 1½	
323. 488	A	5	0.00	38. 16	½ - ½		358. 278	A	3	7. 06	41. 52	½ - ½	
323. 671	A	4	0.02	38. 16	1½ - ½		358. 509	A	5	7. 08	41. 51	2½ - 1½	
323. 431	A	4	0.00	38. 17	½ - 1½		358. 356	A	5	7. 07	41. 52	1½ - ½	
314. 850	A	9	0.02	39. 23	1½ - 2½	2p ¹ P° - 4d ¹ D (7)	358. 469	A	5	7. 07	41. 51	1½ - 2½	
314. 715	A	8	0.00	39. 23	½ - 1½		358. 327	A	5	7. 06	41. 51	½ - 1½	
314. 877	A	6	0.02	39. 23	1½ - 1½		979. 919	A	9	12. 47	25. 07	2½ - 2½	2p ³ ¹ D - 2p ³ ¹ D° (12)
							979. 842	A	8	12. 47	25. 07	1½ - 1½	
772. 385	A	12	7. 08	23. 06	2½ - 1½	2p ³ ¹ P - 2p ³ ¹ S° (8)	772. 891	A	9	12. 47	28. 44	2½ - 1½	2p ³ ¹ D - 2p ³ ¹ P° (13)
771. 901	A	11	7. 07	23. 06	1½ - 1½		772. 975	A	8	12. 47	28. 44	1½ - ½	
771. 544	A	10	7. 06	23. 06	½ - 1½		509. 586	A	5	12. 47	36. 70	2½ - 1½	2p ³ ¹ D - 3s ¹ P° (14)
							509. 897	A	4	12. 47	36. 68	1½ - ½	

N III—Continued

N III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High						Low	High			
Vac 428.180 428.244	A A	6 5	12.47 12.47	41.30 41.30	$2\frac{1}{2}-2\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$2p^3$ ^3D-3d $^3D^o$ (15)	1885.25	A	10	32.99 38.17	39.54 42.31		$3d$ ^3D-4f $^3F^o$ (24)	
418.705 418.910	A A	7 6	12.47 12.47	41.96 41.94	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$2p^3$ ^3D-3d $^3F^o$ (16)	Air 2983.58 2972.60	B (4)	5 38.16	42.31 42.31				
1006.015	A	6	16.17	28.44	$\frac{1}{2}-$	$2p^3$ $^3S-2p^4$ $^3P^o$ (17)	Air 2983.58 2972.60	B (4)	5 38.16	42.31 42.31		$3p$ ^3P-3d $^3P^o$ (25)		
472.392 472.232	A A	5 4	16.17 16.17	42.31 42.31	$\frac{1}{2}-1\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$2p^3$ ^3S-3d $^3P^o$ (18)	2862.26	B (6n)	39.54	43.85		$4f$ $^3F^o-6g$ 3G (26)		
1751.75 1747.86 1751.24	A A A	10 9 6	18.02 18.01 18.02	25.07 25.07 25.07	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$2p^3$ $^3P-2p^4$ $^3D^o$ (19)	Vac *1908.11	C	7	41.30 47.77	47.77 $[2\frac{1}{2}-3\frac{1}{2}]$ $[1\frac{1}{2}-2\frac{1}{2}]$		$3d$ $^3D^o-4f$ 3F (27)	
1184.544 1183.030	A A	8 7	18.02 18.01	28.44 28.44	$1\frac{1}{2}-$ $\frac{1}{2}-$	$2p^3$ $^3P-2p^4$ $^3P^o$ (20)	Air 2453.85 2462.56 2468.36	B (4) (1) (0)	41.51 41.51 41.52	46.53 46.52 46.52	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$		$3d$ $^3P^o-4p$ $^3D^\dagger$ (28)	
Air 2713.95 2714.08	B B	4 (3)	28.44	32.99	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$	$2p^3$ $^3P^o-3d^3$ D^\dagger (21)	Vac *1920.86 1921.49 *1920.86	C C C	8 4 8	41.51 41.51 41.52	47.93 47.94 47.94	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$		$3d$ $^3P^o-4f$ $^3D^\dagger$ (29)
Vac 1805.5 1804.3	A A	7 6	30.33 30.33	37.17 37.17	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$3p$ $^3P^o-4s$ 3S (22)	Air 2063.99 2063.50 2068.25	B (10) (10) (6)	41.96 41.94 41.96	47.93 47.92 47.92	$3\frac{1}{2}-4\frac{1}{2}$ $2\frac{1}{2}-3\frac{1}{2}$ $3\frac{1}{2}-3\frac{1}{2}$		$3d$ $^3P^o-4f$ 3G (30)	
Air 2247.92 2248.88	B B	(6) (5)	32.99 32.99	38.48 38.48	$2\frac{1}{2}-1\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$3d$ ^3D-4p $^3P^\dagger$ (23)								

N IV

I P 77.09 Anal B List C Oct. 1947

REFERENCES

- A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 62 (1934). W L, I, T
 B L. J. Freeman, Proc. Roy. Soc. London [A] 127, 330 (1930). W L, I, T
 B. Edlén, Zeit. Phys. 98, 561 (1936). T

N IV

N IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 765. 140	A	17	0.00	16.13	0-1	2s ² 1S - 2p ¹ P ^o (1)	335. 050	A	11	16.13	52.98	1-2	2p ¹ P ^o - 3d ¹ D (10)
247. 205	A	10	0.00	49.98	0-1	2s ² 1S - 3p ¹ P ^o (2)	285. 563	A	5	16.13	59.36	1-1	2p ¹ P ^o - 3p ¹ P (11)
923. 211	A	12	(8.31	21.69)	2-2	2p ¹ P ^o - 2p ² 3P (3)	270. 995	A	6	16.13	61.69	1-2	2p ¹ P ^o - 3p ¹ D (12)
923. 045	A	10	(8.30	21.67)	1-1		345. 063	A	5	(21.69	57.46)	2-2	2p ² 3P - 3s ¹ P ^o (13)
924. 274	A	10	(8.31	21.67)	2-1		345. 107	A	3	(21.67	57.44)	1-1	
923. 669	A	10	(8.30	21.66)	1-0		303. 123	A	6	(21.69	62.41)	2-3	2p ² 3P - 3d ¹ D ^o (14)
921. 982	A	10	(8.30	21.69)	1-2		303. 048	A	5	(21.67	62.41)	1-2	
922. 507	A	10	(8.29	21.67)	0-1		303. 009	A	4	(21.66	62.40)	0-1	
322. 724	A	9	(8.31	46.57)	2-1	2p ¹ P ^o - 3s ¹ S (4)	303. 163	A	4	(21.69	62.41)	2-2	
322. 570	A	8	(8.30	46.57)	1-1		303. 079	A	4	(21.67	62.40)	1-1	
322. 503	A	7	(8.29	46.57)	0-1		297. 815	A	5	(21.69	63.14)	2-2	2p ² 3P - 3d ¹ P ^o (15)
283. 579	A	12	(8.31	51.85)	2-3	2p ¹ P ^o - 3d ¹ D [†] (5)	*297. 644	A	4b	(21.67	63.14)	1-1	
283. 470	A	11	(8.30	51.85)	1-2					(21.67	63.14)	1-0	
283. 420	A	10	(8.29	51.85)	0-1		351. 931	A	5	23.32	58.40	2-1	2p ² 3D - 3s ¹ P ^o (16)
225. 025	A	5	(8.31	63.13)	2-3	2p ¹ P ^o - 4d ¹ D (6)							
225. 136	A	4	(8.30	63.13)	1-2		323. 175	A	7	23.32	61.52	2-2	2p ² 3D - 3d ¹ D ^o (17)
225. 098	A	3	(8.29	63.13)	0-1		315. 053	A	8	23.82	62.50	2-3	2p ² 3D - 3d ¹ F ^o (18)
1718. 52	A	10	16.13	23.32	1-2	2p ¹ P ^o - 2p ² 3D (7)							
955. 335	A	10	16.13	29.06	1-0	2p ¹ P ^o - 2p ² 1S (8)	Air						
387. 353	A	4	16.13	48.00	1-0	2p ¹ P ^o - 3s ¹ S (9)	2646. 89	B	(8)	(63.78	68.44)	4-5	4f ¹ F ^o - 5g ¹ G (19)
							2646. 10	B	(7)	(63.78	68.44)	3-4	
							2645. 57	B	(7)	(63.78	68.44)	2-3	

N V

IP 97.47 Anal B List C Oct. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 44 (1934). W L, I, T

N V

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1238. 800	A	8	0.00	9.97	½-1½	2s ² 1S - 2p ² 3P ^o (1)
1242. 778	A	7	0.00	9.93	½-½	
209. 270	A	7	0.00	58.99	½-1½	2s ² 1S - 3p ² 3P ^o (2)
209. 303	A	6	0.00	58.98	½-½	
162. 562	A	4	0.00	75.94	½-	2s ² 1S - 4p ² 3P ^o (3)
266. 375	A	7	9.97	56.31	1½-½	2p ² 3P ^o - 3s ¹ S (4)
266. 192	A	6	9.93	56.31	½-½	
247. 710	A	11	9.97	59.80	1½-2½	2p ² 3P ^o - 3d ¹ D (5)
247. 563	A	10	9.93	59.80	½-1½	
186. 153	A	5	9.97	76.28	1½-2½	2p ² 3P ^o - 4d ¹ D (6)
186. 070	A	4	9.93	76.28	½-1½	

OXYGEN

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IP 13.56 Anal A List C Dec. 1947

REFERENCES

- A K. R. More and C. A. Rieke, Phys. Rev. **50**, 1054 (1936). W L, (I)
 B B. Edlén, Kungl. Svenska Vetenskapsakad. Handl. [3] **20**, No. 10, p. 26 (1943). W L, T
 C J. C. Boyce and C. A. Rieke, Phys. Rev. **47**, 653 (1935). W L, (I)
 D A. Fowler, Proc. Roy. Soc. London [A] **110**, 476 (1926). W L, (I)
 J. J. Hopfield, Astroph. J. **59**, 114 (1924). I

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IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1355. 605	B	8	0.00	9. 11	2-2	$2p^4 \ ^3P - 3s \ ^1S^o$ (1)	1152. 129	A	(5)	1. 96	12. 67	2-2	$2p^4 \ ^1D - 3s' \ ^1D^o$ (6)
1358. 524	B	5	0.02	9. 11	1-2								
1302. 174†	A	10	0.00	9. 48	2-1	$2p^4 \ ^3P - 3s \ ^1S^o$ (2)	999. 493	A	(2)	1. 96	14. 31	2-1	$2p^4 \ ^1D - 3s'' \ ^1P^o$ (7)
1304. 858	A	10	0.02	9. 48	1-1								
1306. 023	A	10	0.03	9. 48	0-1								
1039. 226	B	8	0.00	11. 88	2-1	$2p^4 \ ^3P - 4s \ ^1S^o$ (3)	923. 011	B	(-)	1. 96	15. 35	2-3	$2p^4 \ ^1D - 3d' \ ^1F^o$ (8)
1040. 932	A	8	0.02	11. 88	1-1								
1041. 686	A	7	0.03	11. 88	0-1								
1025. 766	B	9	0.00	12. 03	2-	$2p^4 \ ^3P - 3d \ ^1D^o$ (4)	1217. 643	A	(2)	4. 17	14. 31	0-1	$2p^4 \ ^1S - 3s'' \ ^1P^o$ (9)
1027. 421	A	8	0.02	12. 03	1-								
1028. 155	B	7	0.03	12. 03	0-1								
988. 775	C	(8)	0.00	12. 49	2-3	$2p^4 \ ^3P - 3s' \ ^1D^o \dagger$ (5)	Air						
990. 205	A	(8)	0.02	12. 49	1-2		2883. 78	D	(3)	10. 94	15. 22	-2	$3p \ ^1P - 3d' \ ^1P^o$ (10)
990. 794	A	(4)	0.03	12. 49	0-1		2878. 95	D	(2)	10. 94	15. 23	-1	
							2876. 30	D	(1n)	10. 94	15. 23	1-0	

O II

I P 35.00 Anal A List D Dec. 1947

REFERENCES

- A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 136 (1934). W L, I, T
 B A. Fowler, Proc. Roy. Soc. London [A] 110, 476 (1926). W L, I, T
 C. Mihul, Ann. de Phys. [10] 9, 261 (1928). T

O II

O II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
834. 462†	A	15	0.00	14. 79	1½ - 2½	2p ³ 4S° - 2p ⁴ 4P (1)	672. 948	A	8	5.00	23. 34	- 1½	2p ³ 4P° - 3s 3P (12)
833. 326	A	15	0.00	14. 81	1½ - 1½		673. 768	A	7	5.00	23. 32	- ½	
832. 754	A	14	0.00	14. 82	1½ - ½		644. 148	A	12	5.00	24. 16	- ½	2p ³ 4P° - 2p ⁴ 4S (13)
539. 086	A	8	0.00	22. 90	1½ - 2½	2p ³ 4S° - 3s' 4P (2)	600. 585	A	6	5.00	25. 55		2p ³ 4P° - 3s' 3D (14)
539. 547	A	8	0.00	22. 88	1½ - 1½		580. 967	A	7	5.00	26. 24	- 1½	2p ³ 4P° - 2p ⁴ 4P (15)
539. 853	A	7	0.00	22. 87	1½ - ½		580. 400	A	6	5.00	26. 27	- ½	
430. 177	A	6	0.00	28. 70	1½ - 2½	2p ³ 4S° - 3d' 4P (3)	518. 242	A	5	5.00	28. 82	- 1½	2p ³ 4P° - 3d' 3P (16)
430. 041	A	6	0.00	28. 71	1½ - 1½		517. 937	A	4	5.00	28. 83	- ½	
429. 918	A	5	0.00	28. 71	1½ - ½		515. 498	A	5	5.00	28. 94	1½ - 2½	2p ³ 4P° - 3d' 3D (17)
							515. 640	A	4	5.00	28. 94	- 1½	
718. 484	A	17	3.31	20. 49	2½ -	2p ³ 4D° - 2p ⁴ 4D (4)	Air						
718. 562	A	16	3.31	20. 49	1½ -		2445. 55	B	10	23. 34	28. 39	1½ - 2½	3s 3P - 3p' 3D° (18)
616. 291	A	7	3.31	23. 34	2½ - 1½	2p ³ 4D° - 3s' 3P (5)	2433. 56	B	9	23. 32	28. 39	½ - 1½	
617. 051	A	6	3.31	23. 32	1½ - ½		2444. 26	B	5	23. 34	28. 39	½ - 1½	
616. 363	A	4	3.31	23. 34	1½ - 1½								
555. 056	A	5	3.31	25. 55	2½ -	2p ³ 4D° - 3s' 3D (6)	2300. 35	B	8	23. 34	28. 71	1½ - 1½	3s 3P - 3p' 3P† (19)
555. 121	A	5	3.31	25. 55	1½ -		2293. 32	B	6	23. 32	28. 70	½ - ½	
538. 256	A	10	3.31	26. 24	2½ - 1½	2p ³ 4D° - 2p ⁴ 4P (7)							
537. 830	A	9	3.31	26. 27	1½ - ½								
538. 318	A	7	3.31	26. 24	1½ - 1½								
485. 086	A	6	3.31	28. 76	2½ - 3½	2p ³ 4D° - 3d' 3F† (8)	2733. 34	B	10	25. 18	29. 69	½ - 1½	3p 3S° - 4s 3P (20)
485. 515	A	5	3.31	28. 74	1½ - 2½		2747. 46	B	6	25. 18	29. 67	½ - ½	
483. 976	A	5	3.31	28. 82	2½ - 1½	2p ³ 4D° - 3d' 3P† (9)							
483. 752	A	4	3.31	28. 83	1½ - ½								
481. 587	A	4	3.31	28. 94	2½ - 2½	2p ³ 4D° - 3d' 3D† (10)	2530. 30	B	5	26. 14	31. 01	2½ - 3½	3p 3D° - 3d' 3F (21)
481. 755	A	3	3.31	28. 94			2517. 97	B	4	26. 11	31. 01	1½ - 2½	
796. 661	A	10	5.00	20. 49		2p ³ 4P° - 2p ⁴ 4D (11)	2575. 300	B	6	26. 45	31. 24	1½ - 2½	3p 3P° - 3d' 3D† (22)
							2571. 476	B	4	26. 44	31. 24	½ - ½	

O III

IP 54.71 Anal A List C Oct. 1947

REFERENCES

- A** B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 126 (1934). W L, I, T
B A. Fowler, Proc. Roy. Soc. London [A] 117, 317 (1928). W L, I, T
 B. Edlén, Naturwiss. 30, 279 (1942). T

O III

O III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
835.292	A	16	0.04	14.82	2-3	$2p^2 \ ^3P - 2p^2 \ ^3D^o$	597.818	A	15	5.33	25.98	0-1	$2p^2 \ ^1S - 2p^2 \ ^1P^o$
833.742	A	16	0.01	14.82	1-2, 1	(1)							
835.096	A	14	0.04	14.82	2-2, 1								
832.927	A	14	0.00	14.82	0-1								
703.850	A	18	0.04	17.58	2-2, 1	$2p^2 \ ^3P - 2p^2 \ ^3P^o$	434.975	A	10	5.33	33.71	0-1	$2p^2 \ ^1S - 3s \ ^1P^o$
702.899	A	17	0.01	17.58	1-2, 1	(2)							
702.822	A	16	0.01	17.58	1-0								
702.332	A	16	0.00	17.58	0-1								
508.182	A	18	0.04	24.33	2-1	$2p^2 \ ^3P - 2p^2 \ ^3S^o$							
507.683	A	17	0.01	24.33	1-1	(3)							
507.391	A	16	0.00	24.33	0-1								
374.075	A	10	0.04	33.04	2-2	$2p^2 \ ^3P - 3s \ ^1P^o$	610.746	A	8	14.82	35.03	3-2	$2p^2 \ ^3D^o - 2p^2 \ ^3P$
374.165	A	8	0.01	33.01	1-1	(4)	*610.043	A	7	14.82	35.06	2-1	
374.436	A	8	0.04	33.01	2-1		609.705	A	6	14.82	35.07	1-0	
374.331	A	8	0.01	32.99	1-0		610.850	A	6	14.82	35.03	2-2	
373.805	A	8	0.01	33.04	1-2		*610.043	A	7	14.82	35.06	1-1	
374.005	A	8	0.00	33.01	0-1								
305.769	A	10	0.04	40.41	2-3	$2p^2 \ ^3P - 3d \ ^3D^o$	898.957	A	8	23.09	36.82	2-2	$2p^2 \ ^1D^o - 2p^4 \ ^1D$
305.656	A	9	0.01	40.40	1-2	(5)							
305.596	A	8	0.00	40.40	0-1								
305.836	A	8	0.04	40.40	2-2								
305.703	A	8	0.01	40.40	1-1								
305.879	A	4	0.04	40.40	2-1								
303.799	A	9	0.04	40.67	2-2	$2p^2 \ ^3P - 3d \ ^3P^o$	2983.78	B	9	33.71	37.85	1-2	$3s \ ^1P^o - 3p \ ^1D$
303.515	A	7	0.01	40.69	1-1	(6)							
303.693	A	7	0.04	40.69	2-1								
303.460	A	7	0.01	40.69	1-0								
303.621	A	7	0.01	40.67	1-2								
303.411	A	7	0.00	40.69	0-1								
599.598	A	18	2.50	23.09	2-2	$2p^2 \ ^1D - 2p^2 \ ^1D^o$	2597.69	B	8	40.67	45.42	2-1	$3d \ ^3P^o - 4p \ ^3S^f$
						(7)	2605.41	B	6	40.69	45.42	1-1	(20)
525.795	A	18	2.50	25.98	2-1	$2p^2 \ ^1D - 2p^2 \ ^1P^o$	2558.06	B	8	40.96	45.79	3-2	$3d \ ^1F^o - 4p \ ^1D$
						(8)							(21)
395.558	A	12	2.50	33.71	2-1	$2p^2 \ ^1D - 3s \ ^1P^o$							
						(9)							
328.448	A	10	2.50	40.09	2-2	$2p^2 \ ^1D - 3d \ ^1D^o$	2686.14	B	10	41.78	46.37	3-2	$3s \ ^3P - 3p \ ^3S^o$
						(10)	2674.57	B	8	41.76	46.37	2-2	
320.979	A	12	2.50	40.96	2-3	$2p^2 \ ^1D - 3d \ ^1F^o$	2665.69	B	7	41.74	46.37	1-2	
						(11)							
277.385	A	7	2.50	47.01	2-3	$2p^2 \ ^1D - 4d \ ^1F^o$	2695.49	B	6	44.85	49.42	1-2	$3p \ ^3S^o - 3d \ ^3P$
						(12)	2687.53	B	5	44.85	49.44	1-1	
							2683.65	B	4	44.85	49.44	1-0	

O IV

IP 77.08 Anal A List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 92 (1934). W L, I, T

O IV

O IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
790. 203	A	16	0.05	15. 67	1½ - 2½	2p ² P° - 2p ³ ² D (1)	625. 852	A	14	8. 83	28. 55	2½ - 1½	2p ² ⁴ P - 2p ³ ⁴ S° (6)
787. 710	A	15	0.00	15. 67	½ - 1½		625. 130	A	14	8. 80	28. 55	1½ - 1½	
790. 103	A	13	0.05	15. 67	1½ - 1½		624. 617	A	13	8. 79	28. 55	½ - 1½	
609. 829	A	15	0.05	20. 29	1½ - ½	2p ² P° - 2p ³ ² S (2)	233. 561	A	8	8. 83	61. 68	2½ - 3½	2p ² ⁴ P - 3d ⁴ D°† (7)
608. 395	A	14	0.00	20. 29	½ - ½		233. 495	A	7	8. 80	61. 67	1½ - 2½	
554. 514	A	18	0.05	22. 31	1½ - 1½	2p ² P° - 2p ² ² P (3)	*233. 457	A	7	8. 79	61. 67	½ -	
554. 074	A	17	0.00	22. 28	½ - ½								
555. 262	A	16	0.05	22. 28	½ - ½								
553. 328	A	16	0.00	22. 31	½ - 1½								
279. 937	A	11	0.05	44. 15	1½ - ½	2p ² P° - 3s ² S (4)	779. 905	A	10	15. 67	31. 50	2½ - 2½	2p ² ² D - 2p ³ ¹ D° (8)
279. 633	A	10	0.00	44. 15	½ - ½		779. 821	A	9	15. 67	31. 50	1½ - 1½	
238. 573	A	15	0.05	51. 79	1½ - 2½	2p ² P° - 3d ² D (5)	260. 389	A	10	15. 67	63. 08	2½ - 3½	2p ² ¹ D - 3d ² F° (9)
238. 361	A	14	0.00	51. 79	½ - 1½		260. 556	A	9	15. 67	63. 05	1½ - 2½	

O V

IP 113.38 Anal A List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 65 (1934). W L, I, T

O V

O V

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 629.732	A	15	0.00	19.60	0-1	2s ² 1S - 2p ¹ P° (1)	774.522	A	7	19.60	35.54	1-0	2p ¹ P° - 2p ² 1S (8)
172.168	A	12	0.00	71.70	0-1	2s ² 1S - 3p ¹ P° (2)	248.459	A	6	19.60	69.29	1-0	2p ¹ P° - 3s ¹ S (9)
760.445	A	12	(10.19	26.43)	2-2	2p ¹ P° - 2p ² 1P (3)	220.352	A	13	19.60	75.63	1-2	2p ¹ P° - 3d ¹ D (10)
760.229	A	10	(10.15	26.39)	1-1		194.593	A	8	19.60	83.04	1-1	2p ¹ P° - 3p ¹ P (11)
762.001	A	10	(10.19	26.39)	2-1		185.747	A	9	19.60	86.07	1-2	2p ¹ P° - 3p ¹ D (12)
761.130	A	10	(10.15	26.37)	1-0								
758.677	A	10	(10.15	26.43)	1-2								
759.440	A	10	(10.14	26.39)	0-1								
215.245	A	9	(10.19	67.55)	2-1	2p ¹ P° - 3s ¹ S (4)							
215.104	A	8	(10.15	67.55)	1-1								
215.034	A	7	(10.14	67.55)	0-1								
192.906	A	14	(10.19	74.19)	2-3	2p ¹ P° - 3d ¹ D (5)	203.890	A	8	(26.43	86.97)	2-3	2p ² 1P - 3d ¹ D°† (13)
192.800	A	13	(10.15	74.19)	1-2		203.821	A	7	(26.39	86.96)	1-2	
192.751	A	12	(10.14	74.18)	0-1		203.783	A	6	(26.37	86.95)	0-1	
*167.991	A	8	(10.19	83.68)	2-3	2p ¹ P° - 3p ¹ D (6)	202.393	A	7	(26.43	87.42)	2-2	2p ² 1P - 3d ¹ P°† (14)
168.077	A	4	(10.19	83.64)	2-2		202.226	A	5	(26.39	87.44)	1-1	
168.042	A	4	(10.15	83.62)	1-1		202.335	A	5	(26.43	87.44)	2-1	
							202.282	A	5	(26.39	87.42)	1-2	
1371.287	A	10	19.60	28.61	1-2	2p ¹ P° - 2p ² 1D (7)	216.018	A	8	28.61	85.75	2-2	2p ² 1D - 3d ¹ D° (15)
							207.794	A	10	28.61	88.02	2-3	2p ² 1D - 3d ¹ F° (16)

O VI

I P 137.52 Anal B List D Dec. 1947

REFERENCE

A B. Edlén, Nova Acta Reg. Soc. Sci. Uppsala [IV] 9, No. 6, 45 (1934). W L, I, T

O VI

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1031.912	A	10	0.00	11.96	½-1½	2s ² 1S - 2p ¹ P° (1)
1037.613	A	9	0.00	11.90	½-½	
150.088	A	10	0.00	82.25	½-1½	2s ² 1S - 3p ¹ P° (2)
150.124	A	9	0.00	82.23	½-½	
184.117	A	9	11.96	79.01	½-½	2p ¹ P° - 3s ¹ S (3)
183.937	A	8	11.90	79.01	½-½	
173.082	A	13	11.96	83.29	½-2½	2p ¹ P° - 3d ¹ D (4)
172.935	A	12	11.90	83.28	½-1½	
129.872	A	6	11.96	107.02	½-2½	2p ¹ P° - 4d ¹ D (5)
129.786	A	5	11.90	107.02	½-1½	

FLUORINE

F I

IP 17.35 Anal B List D Dec. 1947

REFERENCE

A K. Lidén, Ark. Fysik (Stockholm) I, No. 9, 251 (1949). W L, I, T

F I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
954. 825†	A	1000	0.00	12.93	1½ - 1½	2p ⁴ 3P ^o - 3s' 3P
955. 545	A	750	0.05	12.97	½ - ½	(1)
951. 871	A	500	0.00	12.97	1½ - ½	
958. 524	A	500	0.05	12.93	½ - ½	
806. 964	A	150	0.00	15.30	1½ - 2½	2p ⁴ 3P ^o - 3s' 3D
809. 599	A	125	0.05	15.30	½ - ½	(2)

F II

IP 34.84 Anal B List D Dec. 1947

REFERENCES

A I. S. Bowen, Phys. Rev. 45, 82 (1934). W L, I, T
 B. Edlén, Zeit. Phys. 93, 433 (1935). T
 H. Dingle, Proc. Roy. Soc. London [A] 128, 600 (1930). T

F II

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
606. 81†	A	9	0.00	20.34	2-2	2p ⁴ 3P - 2p ⁴ 3P ^o
606. 95	A	4	0.04	20.38	1-1	(1)
605. 67	A	8	0.00	20.38	2-1	
606. 27	A	7	0.04	20.40	1-0	
608. 06	A	8	0.04	20.34	1-2	
607. 48	A	7	0.06	20.38	0-1	
546. 846	A	6	0.00	22.57	2-1	2p ⁴ 3P - 3s' 3S ^o
547. 873	A	4	0.04	22.57	1-1	(2)
548. 324	A	3	0.06	22.57	0-1	
471. 990	A	6	0.00	26.15	2-3	2p ⁴ 3P - 3s' 3D ^o
472. 710	A	5	0.04	26.16	1-2	(3)
473. 021	A	3	0.06	26.16	0-1	

NEON

Ne I

I P 21.47 Anal A List D Feb. 1948

REFERENCES

- A** J. C. Boyce, Phys. Rev. **46**, 378 (1934). W L, I, T
B F. Paschen, Ann. der Phys. [4] **60**, 405 (1919). W L, I, T
 W. F. Meggers and C. J. Humphreys, Bur. Std. J. Research **10**, 429, RP540 (1933). T
 B. Edlén, unpublished material (Nov. 1946). T

Ne I						Ne II							
I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Vac 743.70	A	12	0.00	16.60	0-1	$2p^6 \ ^1S - 3s [1\frac{1}{2}]^o$ (1)	Air 2992.438 2992.420	B	8	16.55 16.60	20.67 20.72	2-1 1-0	$3s [1\frac{1}{2}]^o - 5p [1\frac{1}{2}]^o$ (8)
735.89†	A	30	0.00	16.64	0-1	$2p^6 \ ^1S - 3s' [1\frac{1}{2}]^o$ (2)	2982.663	B	9	16.55	20.69	2-3	$3s [1\frac{1}{2}]^o - 5p [2\frac{1}{2}]^o$ (9)
629.729	A	6	0.00	19.60	0-1	$2p^6 \ ^1S - 4s [1\frac{1}{2}]^o$ (3)	2974.714	B	9	16.55	20.70	2-2	$3s [1\frac{1}{2}]^o - 5p [1\frac{1}{2}]^o$ (10)
626.819	A	6	0.00	19.69	0-1	$2p^6 \ ^1S - 4s' [1\frac{1}{2}]^o$ (4)	2947.297	B	8	16.60	20.79	1-2	$3s [1\frac{1}{2}]^o - 5p' [1\frac{1}{2}]^o$ (11)
619.092	A	4	0.00	19.94	0-1	$2p^6 \ ^1S - 3d [1\frac{1}{2}]^o$ (5)	2913.168	B	8	16.55	20.78	2-1	$3s [1\frac{1}{2}]^o - 5p' [1\frac{1}{2}]^o$ (12)
618.668	A	5	0.00	19.95	0-1	$2p^6 \ ^1S - 3d [1\frac{1}{2}]^o$ (6)	2675.64 2675.24	B	8	16.60 16.60	21.21 21.21	1-1 1-2	$3s [1\frac{1}{2}]^o - 7p' [1\frac{1}{2}]^o$ (13)
615.623	A	5	0.00	20.05	0-1	$2p^6 \ ^1S - 3d' [1\frac{1}{2}]^o$ (7)	2932.721	B	7	16.78	20.98	2-0	$3s' [1\frac{1}{2}]^o - 6p [1\frac{1}{2}]^o$ (14)

Ne II

I P 40.91 Anal A List C Nov. 1948

REFERENCES

- A** J. C. Boyce, Phys. Rev. **46**, 378 (1934). W L, I, T
B T. L. de Bruin und C. J. Bakker, Zeit. Phys. **69**, 19 (1931). W L, I, T

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IP 63.5 Anal C List C Sept. 1948

REFERENCES

- A J. C. Boyce, Phys. Rev. 46, 378 (1934). W L, I, T
 B V. v. Keussler, Zeit. Phys. 85, 1 (1933). W L, I
 C T. L. de Bruin, Zeit. Phys. 77, 505 (1932). W L, I, T

Ne III

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
489. 501	A	10	0.00	25. 22	2-2	$2p^4 \ ^3P - 2p^4 \ ^3P^o$	301. 124	A	4	3. 19	44. 19	2-2	$2p^4 \ ^1D - 3s' \ ^1D^o$
489. 641	A	4	0.08	25. 29	1-1								(7)
488. 103	A	8	0.00	25. 29	2-1								
488. 868	A	7	0.08	25. 33	1-0								
491. 050	A	9	0.08	25. 22	1-2								
490. 310	A	7	0.11	25. 29	0-1								
313. 048	A	4	0.00	39. 44	2-1	$2p^4 \ ^3P - 3s \ ^3S^o$	427. 840	A	3	6. 88	35. 74	0-1	$2p^4 \ ^1S - 2p^4 \ ^1P^o$
313. 677	A	3	0.08	39. 44	1-1								(9)
313. 92	A	1	0.11	39. 44	0-1								
283. 206	B	6	0.00	43. 60	2-3	$2p^4 \ ^3P - 3s' \ ^3D^o$	308. 559	A	1	6. 88	46. 89	0-1	$2p^4 \ ^1S - 3s'' \ ^1P^o$
*283. 690	B	3u	0.08	43. 60	1-2								(10)
283. 894	B	3	0.11	43. 60	0-1								
*283. 178	B	3u	0.00	43. 60	2-2								
*283. 690	B	3u	0.08	43. 60	1-1								
*283. 178	B	3u	0.00	43. 60	2-1								
267. 059	B	3u	0.00	46. 22	2-2, 1	$2p^4 \ ^3P - 3s'' \ ^3P^o$							
267. 516	B	3u	0.08	46. 23	1-								
267. 709	B	2	0.11	46. 23	0-1								
251. 145	B	2u	0.00	49. 16	2-	$2p^4 \ ^3P - 3d \ ^3D^o$	2677. 90	C	30	39. 44	44. 04	1-2, 0	$3s \ ^3S^o - 3p \ ^3P$
251. 558	B	2	0.08	49. 16	1-2, 1		2678. 64	C	25	39. 44	44. 04	1-1	
251. 726	B	2	0.11	49. 16	0-1								
379. 308	A	7	3. 19	35. 74	2-1	$2p^4 \ ^1D - 2p^4 \ ^1P^o$	1257. 190	A	6	39. 44	49. 25	1-2	$3s \ ^3S^o - 3p' \ ^3P$
							1255. 685	A	5	39. 44	49. 27	1-1	
							1255. 026	A	2	39. 44	49. 27	1-0	

Ne IV

I P 96.77 Anal B List C Sept. 1948

REFERENCES

- A** J. C. Boyce, Phys. Rev. **46**, 381 (1934). W L, T
B F. W. Paul and H. D. Polster, Phys. Rev. **59**, 424 (1941). W L, I, T

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
543. 884	A	150	0. 00	22. 70	$1\frac{1}{4}-2\frac{1}{2}$	$2p^3 \ ^4S^o - 2p^4 \ ^4P$	212. 556	B	150	(5. 06	63. 13)		$2p^3 \ ^2D^o - 3s' \ ^2D$
542. 076	A	100	0. 00	22. 77	$1\frac{1}{2}-1\frac{1}{2}$	(1)	186. 575	B	150	(5. 06	71. 22)		$2p^3 \ ^1D^o - 3d'' \ ^2D$
541. 124	A	80	0. 00	22. 81	$1\frac{1}{4}-\frac{3}{2}$		521. 810	A	25	(7. 67	31. 33)	$1\frac{1}{2}-2\frac{1}{2}$	$2p^3 \ ^1P^o - 2p^4 \ ^3D$
208. 485	B	100	0. 00	59. 21	$1\frac{1}{4}-2\frac{1}{2}$	$2p^3 \ ^4S^o - 3s \ ^4P$	521. 730	A	25	(7. 67	31. 33)	$\frac{3}{2}-1\frac{1}{2}$	(7)
208. 734	B	100	0. 00	59. 14	$1\frac{1}{2}-1\frac{1}{2}$	(2)	421. 584	A	150	(7. 67	36. 95)		
208. 899	B	80	0. 00	59. 10	$1\frac{1}{4}-\frac{3}{2}$		388. 23	A	100	(7. 67	39. 47)	$- \frac{3}{2}$	$2p^3 \ ^1P^o - 2p^4 \ ^3P$
172. 620	B	80	0. 00	71. 52	$1\frac{1}{4}-2\frac{1}{2}$	$2p^3 \ ^4S^o - 3d \ ^4P$	387. 13	A	125	(7. 67	39. 56)	$-1\frac{1}{2}$	(10)
172. 525	B	50	0. 00	71. 55	$1\frac{1}{2}-1\frac{1}{2}$	(3)	194. 276	B	100	(7. 67	71. 22)		$2p^3 \ ^1P^o - 3d'' \ ^2D$
172. 492	B	40	0. 00	71. 57	$1\frac{1}{4}-\frac{3}{2}$								(11)
*469. 817	A	200	(5. 06	31. 33)	$2\frac{1}{2}-2\frac{1}{2}$	$2p^3 \ ^2D^o - 2p^4 \ ^2D$							
469. 865	A	200	(5. 06	31. 33)	$1\frac{1}{2}-1\frac{1}{2}$	(4)							
358. 70	A	200w	(5. 06	39. 47)	$1\frac{1}{2}-1\frac{1}{2}$	$2p^3 \ ^2D^o - 2p^4 \ ^2P$							
357. 831	B	50	(5. 06	39. 56)	$1\frac{1}{4}-\frac{3}{2}$	(5)							

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I P 125.9 Anal B List C Sept. 1948

REFERENCE

- A** F. W. Paul and H. D. Polster, Phys. Rev. **59**, 424 (1941). W L, I, T
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I P 5.12 Anal A List C July 1947

REFERENCE

- A** A. Fowler, *Report on Series in Line Spectra* p. 99 (Fleetway Press, London, 1922). W L, I T
H. Kayer, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by
R. Ritschl, p. 193 (Julius Springer, Berlin, 1939). (I)

Na I

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Na II

I P 47.10 Anal B List C June 1947

REFERENCES

- A** J. Söderqvist, Nova Acta Reg. Soc. Sci. Uppsala [IV] **9**, No. 7, p. 26 (1934). W L, I, T
B S. Frisch, Zeit. Phys. **70**, 498 (1931). W L, I, T

Na II

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 376. 375	A	3	0.00	32.80	0-1	$2p^6$ -1S (1) -3s [1½]°	Air 2974. 991	B	6	32.87	37.02	0-1	$3s'$ [½]° -3p'[1½] (9)
372. 069‡	A	6	0.00	33.18	0-1	$2p^6$ -1S (2) -3s' [½]°	2671. 829	B	6	36.20	40.82	1-1	$3p$ [½] -3d [½] (10)
301. 432	A	1	0.00	40.95	0-1	$2p^6$ -1S (3) -3d [1½]°	2660. 996	B	7	36.20	40.84	1-2	$3p$ [½] -3d [1½] (11)
300. 151	A	1	0.00	41.13	0-1	$2p^6$ -1S (4) -3d'[1½]°	2611. 815	B	7	36.20	40.92	1-2	$3p$ [½] -4s [1½] (12)
Air 2917. 516	B	5	32.71	36.94	2-2	3s [1½]° -3p [1½]	2531. 548	B	6	36.20	41.07	1-0	$3p$ [½] -4s' [½] (13)
*2984. 183	B	7	32.80	36.94	1-2	(5)							
2859. 481	B	5	32.71	37.02	2-1	3s [1½]° -3p'[1½] (6)	2951. 231	B	8	36.70	40.88	3-4	$3p$ [2½] -3d [3½] (14)
2841. 721	B	7	32.71	37.05	2-2	3s [1½]° -3p'[1½]							
2904. 914	B	7	32.80	37.05	1-2	(7)	*2984. 183	B	7	36.81	40.94	1-2	$3p$ [1½] -3d [2½] (15)
2881. 140	B	6	32.80	37.08	1-0	3s [½]° -3p [1½] (8)	2893. 946	B	6	36.81	41.07	1-0	$3p$ [1½] -4s' [½] (16)

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I P 7.61 Anal A List C July 1947

REFERENCES

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 A. S. King, Mt. Wilson Contr. No. 150; Astroph. J. **48**, 13 (1918). I
 A. Fowler, *Report on Series in Line Spectra* p. 116 (Fleetway Press, London, 1922). I
 H. Kayser und H. Konen, *Handbuch der Spectroscopie* 7, p. 1028 (S. Hirzel, Leipzig, 1934). (I)

Mg II

I P 14.97 Anal A List C May 1947

REFERENCE

A A. Fowler, *Report on Series in Line Spectra*, p. 118 (Fleetway Press, London, 1922). W L, I, T**Mg II****Mg II**

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2795. 523‡ 2802. 698	A A	50 50	0.00 0.00	4.41 4.40	$\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$3s \ ^2S - 3p \ ^3P^o$ (1)	2660. 821 2660. 755	A A	10	8.83 (8.83)	13.46 13.46	$2\frac{1}{2}-$ $\frac{1}{2}-$	$3d \ ^3D - 6f \ ^3F^o$ (4)
2936. 496 2928. 625	A A	35 35	4.41 4.40	8.62 8.62	$\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$3p \ ^3P^o - 4s \ ^2S$ (2)	2449. 573	A	6	8.83	13.86	-	$3d \ ^3D - 7f \ ^3F^o$ (5)
2797. 989 2790. 768	A A	40 40	4.41 4.40	8.83 8.83	$\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$	$3p \ ^3P^o - 3d \ ^3D$ (3)	2971. 70 2969. 02	A A	1 0	9.96 9.95	14.11 14.11	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4p \ ^3P^o - 9s \ ^2S$ (6)
							2967. 87 2965. 19	A A	1 0	9.96 9.95	14.11 14.11	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4p \ ^3P^o - 8d \ ^3D$ (7)

Mg III

I P 79.79 Anal B List D July 1947

REFERENCE

A J. Söderqvist, *Nova Acta Reg. Soc. Sci. Uppsala* [IV] 9, No. 7, 27 (1934). W L, I, T**Mg III****Mg III**

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 234. 258	A	12	0.00	52.70	0-1	$2p^6 \ ^1S - 3s \ [1\frac{1}{2}]^o$ (1)	Air 2396. 04 2468. 50	A A	3d 3	52.55 52.70	57.70 57.70	$2-1$ $1-1$	$3s \ [1\frac{1}{2}]^o - 3p \ [\frac{3}{2}]$ (5)
231. 730	A	14	0.00	53.27	0-1	$2p^6 \ ^1S - 3s' \ [\frac{3}{2}]^o$ (2)	2065. 54 2092. 64 2040. 23	A A A	5d 4d 3d	52.55 52.70 52.55	58.52 58.60 58.60	$2-3$ $1-2$ $2-2$	$3s \ [1\frac{1}{2}]^o - 3p \ [2\frac{1}{2}]$ (6)
187. 194	A	8	0.00	65.95	0-1	$2p^6 \ ^1S - 3d \ [1\frac{1}{2}]^o$ (3)	2529. 97	A	2	52.82	57.70	0-1	$3s' \ [\frac{3}{2}]^o - 3p \ [\frac{3}{2}]$ (7)
186. 510	A	9	0.00	66.19	0-1	$2p^6 \ ^1S - 3d' \ [1\frac{1}{2}]^o$ (4)							

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I P 5.96 Anal A List C Aug. 1947

REFERENCES

- A A. Fowler, *Report on Series in Line Spectra*, p. 156
 (Fleetway Press, London, 1922). W L, I, T
 B F. Paschen, Ann. der Phys. [5] 12, 522 (1932). W L, I, T

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I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air													
2660.393	A	10R	0.01	4.65	1½ - ½	3p ¹ P ^o - 5s ¹ S (1)	2174.028	A	1R	0.01	5.69	1½ - 2½	3p ¹ P ^o - 8d ¹ D (9)
2652.484	A	10R	0.00	4.65	¾ - ½		2168.805	A	1R	0.00	5.69	¾ - 1½	
2575.113	A	10R	0.01	4.81	1½ - 2½	3p ¹ P ^o - 4d ¹ D (2)	2180.96	B	8	3.13	8.79	½ - 1½?	4s ¹ S - 3d ¹ P ^o (10)
2567.997	A	10R	0.00	4.81	¾ - 1½		2177.35	B	6	3.13	8.80	¾ - ½?	
2575.411	A	3R	0.01	4.81	1½ - 1½								
2378.408	A	3	0.01	5.20	1½ - ½	3p ¹ P ^o - 6s ¹ S (3)	2372.115	B	10	3.60	8.80	2½ - 3½	3p ³ P - 3d ¹ D ^o † (11)
2372.084	A	3	0.00	5.20	¾ - ½		2369.289	B	8	3.59	8.80	1½ - 2½	
2373.132	A	8R	0.01	5.21	1½ - 2½	3p ¹ P ^o - 5d ¹ D (4)	2367.596	B	5	3.58	8.80	½ - 1½	
2367.064	A	8R	0.01	5.21	¾ - 1½		2373.549	B	6	3.60	8.80	2½ - 2½	
2373.360	A	2R	0.01	5.21	1½ - 1½		2370.208	B	6	3.59	8.80	1½ - 1½	
2269.093	A	4R	0.01	5.45	1½ - 2½	3p ¹ P ^o - 6d ¹ D (5)	2368.090	B	5	3.58	8.79	¾ - ½	
2263.453	A	4R	0.00	5.45	¾ - 1½		2321.570	B	8	3.60	8.91	2½ - 2½	3p ³ P - 3d ¹ P ^o (12)
2269.212	A	2R	0.01	5.45	1½ - 1½		2314.992	B	1	3.59	8.92	1½ - 1½	
2263.731	A	2	0.01	5.47	1½ - ½	3p ¹ P ^o - 7s ¹ S (6)	2311.031	B	1	3.58	8.92	½ - ½	
2257.999	A	2	0.00	5.47	¾ - ½		2319.069	B	4	3.60	8.92	2½ - 1½	
2210.046	A	2R	0.01	5.60	1½ - 2½	3p ¹ P ^o - 7d ¹ D (7)	2313.527	B	4	3.59	8.92	1½ - ½	
*2204.627	A	2R	0.00	5.60	¾ - 1½		2317.487	B	5	3.59	8.91	1½ - 2½	
*2204.627	A	2R	0.01	5.61	1½ - ½	3p ¹ P ^o - 8s ¹ S (8)	2312.491	B	2	3.58	8.92	¾ - 1½	
2199.64	A	1	0.00	5.61	¾ - ½		2837.95	B	12	4.00	8.35	2½ - 2½	3d ¹ D - 3d ¹ D ^o (13)
							2840.11	B	10	4.00	8.35	1½ - 1½	

Al II

I P 18.75 Anal A List C July 1947

REFERENCES

- A R. A. Sawyer and F. Paschen, Ann. der Phys. [4] 84, 1 (1927). W L, I, T
 B F. Paschen and R. Ritschl, Ann. der Phys. [5] 18, 885 (1933). W L, T
 C R. V. Zumstein, Phys. Rev. 38, 2214 (1931). W L

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2669. 166	A	10	0.00	4.62	0-1	$3s^2 - 3p^1P^o$ (1)	1625. 60	A	3	7.39	14.98	1-0	$3p^1P^o - 5s^1S$ (9)
Vac 1670. 81†	A	15	0.00	7.39	0-1	$3s^2 - 3p^1P^o$ (2)	1539. 74	A	10	7.39	15.41	1-2	$3p^1P^o - 4d^1D$ (10)
Air 2087. 0 2081. 5	A	5	4.64	10.55	2-2	$3p^1P^o - 3p^1D$ (3)	Air 2631. 553	A	7	10.55	15.24	2-3	$3p^1D - 4f^1F^o$ (11)
Vac 1862. 34	C	10	4.64	11.27	2-1	$3p^1P^o - 4s^1S$ (4)	2475. 260	A	4	10.55	15.54	2-1	$3p^1D - 5p^1P^o$ (12)
1858. 05	C	7	4.62	11.27	1-1								
1855. 95	C	3	4.62	11.27	0-1								
1763. 95	A	10	4.64	11.64	2-2	$3p^1P^o - 3p^1P^{\dagger}$ (5)	2902. 14	B	2	11.27	15.52	1-2	$4s^1S - 5p^1P^o$ (13)
1763. 79	A	8	4.62	11.62	1-1		2903. 22	B	1	11.27	15.52	1-1	
1767. 60	A	10	4.64	11.62	2-1		2903. 718	B	0.5	11.27	15.52	1-0	
1724. 981	C	15	4.64	11.80	2-1	$3p^1P^o - 3d^1D$ (6)	2637. 696	A	5	11.80	16.47	3-4	$3d^1D - 5f^1F^o$ (14)
1721. 279	C	10	4.62	11.80	1-1		2638. 263	A	4	11.80	16.47	2-3	
1719. 459	C	8	4.62	11.80	0-1		2638. 695	A	3	11.80	16.47	1-2	
Air 2816. 189	B	20	7.39	11.77	1-0	$3p^1P^o - 4s^1S$ (7)	2638. 182	A	0.5	11.80	16.47	3-3	
Vac 1989. 85	A	2	7.39	13.59	1-2	$3p^1P^o - 3d^1D$ (8)	2638. 625	A	0.5	11.80	16.47	2-2	
							2638. 547	A	0	11.80	16.47	3-2	
							2532. 655	A	2	11.80	16.67	3-2	$3d^1D - 6p^1P^o$ (15)
							2533. 16	A	1	11.80	16.67	2-1	
							2533. 41	A	0.5	11.80	16.67	1-0	

Al III

IP 28.33 Anal A List D May 1947

REFERENCES

- A R. V. Zumstein, Phys. Rev. 38, 2214 (1931). W L
 B E. Ekefors, Zeit. Phys. 51, 471 (1928). W L, I
 F. Paschen, Ann. der Phys. [4] 71, 142 (1923). T

Al III

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1854. 722	A	10	0.00	6.66	$\frac{1}{2} - \frac{1}{2}$	$3s^2S - 3p^1P^o$ (1)
1862. 782	A	10	0.00	6.63	$\frac{1}{2} - \frac{1}{2}$	
695. 817	B	5	0.00	17.74	$\frac{1}{2} - \frac{1}{2}$	$3s^2S - 4p^1P^o$ (2)
696. 212	B	4	0.00	17.73	$\frac{1}{2} - \frac{1}{2}$	
560. 390	B	7	0.00	22.03	$\frac{1}{2} -$	$3s^2S - 5p^1P^o$ (3)

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I P 8.11 Anal A List A Oct. 1947

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Si I

Si I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2516.109†	B	250r	0.03	4.93	2-2	$3p^2 \ ^3P - 4s \ ^3P^\circ$	1850.68	A	50r	0.03	6.70	2-3	$3p^2 \ ^3P - 4d \ ^3D^\circ$
2519.203	B	100r	0.01	4.91	1-1	(1)	1847.47	A	35r	0.01	6.69	1-2	(10)
2528.510	B	175r	0.03	4.91	2-1		1845.53	A	25r	0.00	6.69	0-1	
2524.108	B	125r	0.01	4.90	1-0		1852.48	A	25r	0.03	6.69	2-2	
2506.896	B	150r	0.01	4.93	1-2		1848.16	A	20r	0.01	6.69	1-1	
2514.315	B	100r	0.00	4.91	0-1		1853.17	A	10	0.03	6.69	2-1	
2452.12	A	20	0.03	5.06	2-1	$3p^2 \ ^3P - 4s \ ^1P^\circ$	1841.47	A	20r	0.03	6.73	2-2	$3p^2 \ ^3P - 5s \ ^3P^\circ$
2443.37	A	20	0.01	5.06	1-1	(2)	1843.77	A	15	0.01	6.71	1-1	(11)
2438.77	A	.25	0.00	5.06	0-1		1848.75	A	18	0.03	6.71	2-1	
2216.670	A	150r	0.03	5.59	2-3	$3p^2 \ ^3P - 3d \ ^3D^\circ$	1836.52	A	20	0.01	6.73	1-2	
2210.880	A	100r	0.01	5.59	1-2	(3)	1841.16	A	10	0.00	6.71	0-1	
2207.972	A	75r	0.00	5.59	0-1		1829.89	A	7	0.03	6.77	2-1	$3p^2 \ ^3P - 5s \ ^1P^\circ$
2218.052	A	50r	0.03	5.59	2-2		1825.04	A	1	0.01	6.77	1-1	(12)
2211.737	A	75r	0.01	5.59	1-1		1822.46	A	10	0.00	6.77	0-1	
2218.914	A	25r	0.03	5.59	2-1		1776.85	A	10	0.03	6.98	2-2	$3p^2 \ ^3P - 4d \ ^1D^\circ$
2121.22	A	7	0.03	5.85	2-2	$3p^2 \ ^3P - 3d \ ^1D^\circ$	1772.24	A	1	0.01	6.98	1-2	(13)
2114.59	A	4b	0.01	5.85	1-2	(4)	1770.94	A	10	0.03	7.00	2-2	$3p^2 \ ^3P - 4d \ ^3P^\circ$
2054.81	A	8	0.03	6.03	2-3	$3p^2 \ ^3P - 3p^2 \ ^3D^\circ$	*1776.03	A	6	0.01	7.00	1-1	(14)
2061.18	A	8	0.01	6.00	1-2	(5)	1770.63	A	8	0.03	7.00	2-1	
2065.49	A	5	0.00	5.97	0-1		1765.02	A	5	0.01	7.00	1-0	
2067.40	A	1	0.03	6.00	2-2		1766.34	A	5	0.01	7.00	1-2	
2010.97	A	8	0.03	6.16	2-3	$3p^2 \ ^3P - 3d \ ^3F^\circ$	1763.67	A	4	0.00	7.00	0-1	
2008.43	A	3	0.01	6.15	1-2	(6)	1747.36	A	4	0.03	7.09	2-3	$3p^2 \ ^3P - 4d \ ^3F^\circ$
Vac													
1988.36	A	30	0.03	6.23	2-2	$3p^2 \ ^3P - 3d \ ^3P^\circ$	1745.35	A	2	0.01	7.08	1-2	(15)
1980.00	A	10	0.01	6.24	1-1	(7)	1749.74	A	0	0.03	7.08	2-2	
1985.73	A	20	0.03	6.24	2-1		1707.09	A	0	0.03	7.26	2-1	$3p^2 \ ^3P - 4d \ ^1P^\circ$
1978.57	A	12	0.01	6.25	1-0		1702.81	A	5	0.01	7.26	1-1	(16)
1982.60	A	20	0.01	6.23	1-2		1700.60	A	4	0.00	7.26	0-1	
1976.96	A	15	0.00	6.24	0-1		1704.44	A	7r	0.03	7.27	2-3	$3p^2 \ ^3P - 4d \ ^1F^\circ$
1881.86	A	12	0.03	6.59	2-3	$3p^2 \ ^3P - 3d \ ^1F^\circ$	1697.96	A	20r	0.03	7.30	2-3	(17)
1880.86	A	5	0.03	6.59	2-1	(8)	1696.20	A	20r	0.01	7.29	1-2	$3p^2 \ ^3P - 5d \ ^3D^\circ$
1875.82	A	10	0.01	6.59	1-1		1693.30	A	7r	0.00	7.29	0-1	(18)
1873.11	A	8	0.00	6.59	0-1		1700.43	A	15r	0.03	7.29	2-2	
							1695.50	A	5r	0.01	7.29	1-1	
							1699.70	A	1	0.03	7.29	2-1	

Si I—Continued

Si I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Vac 1698.18	A	4b	0.03	7.30	2-	$3p^2 \ ^3P - 1^{\circ}$ (19)	Vac 1594.92	A	4r	0.03	7.77	2-2	$3p^2 \ ^3P - 8s \ ^1P^{\circ}$ (34)
1697.55	A	3b	0.03	7.30	2-	$3p^2 \ ^3P - 2^{\circ}$ (20)	1597.83	A	2	0.03	7.75	2-1	
1686.83	A	4	0.03	7.35	2-2	$3p^2 \ ^3P - 6s \ ^1P^{\circ}$ (21)	1595.50	A	1	0.01	7.75	1-0	
1689.28	A	3	0.01	7.32	1-1		1591.17	A	0	0.01	7.77	1-2	
1693.47	A	5	0.03	7.32	2-1		1592.15	A	3r	0.00	7.75	0-1	
1690.77	A	3	0.01	7.31	1-0		1597.99	A	3	0.03	7.75	2-3	$3p^2 \ ^3P - 6d \ ^1F^{\circ}$ (35)
1682.67	A	3	0.01	7.35	1-2		1594.53	A	5r	0.03	7.77	2-3	$3p^2 \ ^3P - 7d \ ^1D^{\circ}$ (36)
1687.06	A	1	0.00	7.32	0-1		1592.35	A	3r	0.01	7.76	1-2	
1676.80	A	1	0.00	7.36	0-1	$3p^2 \ ^3P - 6s \ ^1P^{\circ}$ (22)	1590.49	A	2r	0.00	7.76	0-1	
1675.23	A	4r	0.03	7.40	2-2	$3p^2 \ ^3P - 5d \ ^1P^{\circ}$ (23)	1595.82	A	1	0.03	7.76	2-2	
1668.52	A	3	0.01	7.41	1-1		1592.45	A	1	0.01	7.76	1-1	
1672.60	A	3	0.03	7.41	2-1		1589.60	A	1	0.03	7.79	2-1	$3p^2 \ ^3P - 8s \ ^1P^{\circ}$ (37)
1667.63	A	3	0.01	7.41	1-0		1586.00	A	1	0.01	7.79	1-1	
1671.11	A	2	0.01	7.40	1-2		*1583.97	A	0	0.03	7.82	2-3	$3p^2 \ ^3P - 7d \ ^1F^{\circ}$ (38)
1666.36	A	2	0.00	7.41	0-1		1576.76	A	1	0.03	7.86	2-3	$3p^2 \ ^3P - 7d \ ^1F^{\circ}$ (39)
1664.54	A	2	0.03	7.44	2-2	$3p^2 \ ^3P - 5d \ ^1D^{\circ}$ (24)	1573.85	A	1r	0.03	7.87	2-3	$3p^2 \ ^3P - 8d \ ^1D^{\circ}$ (40)
1660.47	A	0	0.01	7.44	1-2		1565.30	A	1	0.00	7.89	0-1	$3p^2 \ ^3P - 9s \ ^1P^{\circ}$ (41)
1653.36	A	1	0.03	7.49	2-3	$3p^2 \ ^3P - 5d \ ^1F^{\circ}$ (25)	1565.30	A	1	0.00	7.89	0-1	
1651.05	A	0	0.01	7.49	1-2		1520.35	A	15	0.78	4.93	2-2	$3p^2 \ ^1D - 4s \ ^1P^{\circ}$ (42)
1633.15	A	2r	0.01	7.57	1-1	$3p^2 \ ^3P - 5d \ ^1P^{\circ}$ (26)	2987.65	A	25	0.78	4.91	2-1	
1631.11	A	4r	0.00	7.57	0-1		2987.65	A	25	0.78	4.91	2-1	
1629.96	A	8r	0.03	7.60	2-3	$3p^2 \ ^3P - 6d \ ^1D^{\circ}$ (27)	2987.65	A	25	0.78	4.91	2-1	
1630.15	A	7r	0.01	7.58	1-2		2987.65	A	25	0.78	4.91	2-1	
1625.71	A	5r	0.00	7.59	0-1		2987.65	A	25	0.78	4.91	2-1	
1633.99	A	3	0.03	7.58	2-2		2987.65	A	25	0.78	4.91	2-1	
1627.70	A	2	0.01	7.59	1-1		2987.65	A	25	0.78	4.91	2-1	
1633.90	A	4	0.03	7.58	2-3	$3p^2 \ ^3P - 5d \ ^1F^{\circ}$ (28)	2881.595	A	200r	0.78	5.06	2-1	$3p^2 \ ^1D - 4s \ ^1P^{\circ}$ (43)
1623.34	A	0	0.03	7.63	2-2	$3p^2 \ ^3P - 7s \ ^1P^{\circ}$ (29)	2563.67	A	4	0.78	5.59	2-2	$3p^2 \ ^1D - 3d \ ^1D^{\circ}$ (44)
1625.58	A	1	0.01	7.60	1-1		2564.82	A	3	0.78	5.59	2-1	
1629.47	A	7r	0.03	7.60	2-1		2435.160	A	100r	0.78	5.85	2-2	$3p^2 \ ^1D - 3d \ ^1D^{\circ}$ (45)
1627.03	A	1	0.01	7.60	1-0		2291.03	A	7	0.78	6.16	2-3	$3p^2 \ ^1D - 3d \ ^1F^{\circ}$ (46)
1619.53	A	1	0.01	7.63	1-2		2295.40	A	1	0.78	6.15	2-2	
1622.87	A	4r	0.03	7.63	2-2	$3p^2 \ ^3P - 6d \ ^1P^{\circ}$ (30)	2261.70	A	1	0.78	6.23	2-2	$3p^2 \ ^1D - 3d \ ^1P^{\circ}$ (47)
1616.55	A	3	0.01	7.65	1-1		2124.111	A	100r	0.78	6.59	2-3	$3p^2 \ ^1D - 3d \ ^1F^{\circ}$ (48)
1620.39	A	3	0.03	7.65	2-1		2122.99	A	10	0.78	6.59	2-1	$3p^2 \ ^1D - 3d \ ^1P^{\circ}$ (49)
1619.00	A	0	0.01	7.63	1-2		2084.47	A	20	0.78	6.70	2-3	$3p^2 \ ^1D - 4d \ ^2D^{\circ}$ (50)
1614.55	A	3	0.00	7.65	0-1								
1615.89	A	3	0.00	7.64	0-1	$3p^2 \ ^3P - 7s \ ^1P^{\circ}$ (31)							
1614.60	A	1	0.03	7.67	2-2	$3p^2 \ ^3P - 6d \ ^1D^{\circ}$ (32)							
1608.92	A	2	0.03	7.70	2-3	$3p^2 \ ^3P - 6d \ ^1F^{\circ}$ (33)							
1605.87	A	1	0.01	7.70	1-2								

Si I—Continued

Si I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Aii 2082. 01	A	15	0. 78	6. 71	2-1	$3p^2 \ ^1D - 5s \ ^3P^o$ (51)	Vac *1766. 03 1769. 60	A	6	0. 78	7. 77	2-2	$3p^2 \ ^1D - 8s \ ^3P^o$ (74)
2058. 13	A	50	0. 78	6. 77	2-1	$3p^2 \ ^1D - 5s \ ^1P^o$ (52)	1769. 78	A	15	0. 78	7. 75	2-3	$3p^2 \ ^1D - 6d \ ^1F^o$ (75)
Vac 1991. 23	A	5	0. 78	6. 98	2-2	$3p^2 \ ^1D - 4d \ ^1D^o$ (53)	1765. 61	A	5b	0. 78	7. 77	2-3	$3p^2 \ ^1D - 7d \ ^3D^o$ (76)
1983. 82	A	3	0. 78	7. 00	2-2	$3p^2 \ ^1D - 4d \ ^3P^o$ (54)	1759. 56	A	3	0. 78	7. 79	2-1	$3p^2 \ ^1D - 8s \ ^1P^o$ (77)
1954. 96 1957. 96	A	6	0. 78	7. 09	2-3	$3p^2 \ ^1D - 4d \ ^3F^o$ (55)	1752. 68	A	0	0. 78	7. 82	2-3	$3p^2 \ ^1D - 7d \ ^3F^o$ (78)
1904. 66	A	12	0. 78	7. 26	2-1	$3p^2 \ ^1D - 4d \ ^1P^o$ (56)	1743. 88	A	5b	0. 78	7. 86	2-3	$3p^2 \ ^1D - 7d \ ^1F^o$ (79)
1901. 34	A	50	0. 78	7. 27	2-3	$3p^2 \ ^1D - 4d \ ^1F^o$ (57)	1740. 34	A	3h	0. 78	7. 87	2-3	$3p^2 \ ^1D - 8d \ ^3D^o$ (80)
1893. 22 1895. 41	A	25	0. 78	7. 30	2-3	$3p^2 \ ^1D - 5d \ ^3D^o$ (58)	1736. 50	A	1	0. 78	7. 89	2-1	$3p^2 \ ^1D - 9s \ ^1P^o$ (81)
1893. 54	A	4	0. 78	7. 30	2-	$3p^2 \ ^1D - 1^o$ (59)	Air 2842. 35	A	3	1. 90	6. 24	0-1	$3p^2 \ ^1S - 3d \ ^3P^o$ (82)
1892. 70	A	3	0. 78	7. 30	2-	$3p^2 \ ^1D - 2^o$ (60)	2631. 28	A	50r	1. 90	6. 59	0-1	$3p^2 \ ^1S - 3d \ ^1P^o$ (83)
1887. 71	A	12	0. 78	7. 32	2-1	$3p^2 \ ^1D - 6s \ ^3P^o$ (61)	2577. 13	A	10	1. 90	6. 69	0-1	$3p^2 \ ^1S - 4d \ ^3D^o$ (84)
1874. 86	A	25	0. 78	7. 36	2-1	$3p^2 \ ^1D - 6s \ ^1P^o$ (62)	2568. 63	A	15	1. 90	6. 71	0-1	$3p^2 \ ^1S - 5s \ ^3P^o$ (85)
1865. 04 1861. 80	A	2	0. 78	7. 40	2-2	$3p^2 \ ^1D - 5d \ ^3P^o$ (63)	2532. 38	A	20	1. 90	6. 77	0-1	$3p^2 \ ^1S - 5s \ ^1P^o$ (86)
1851. 80	A	10	0. 78	7. 44	2-2	$3p^2 \ ^1D - 5d \ ^1D^o$ (64)	2303. 03	A	20	1. 90	7. 26	0-1	$3p^2 \ ^1S - 4d \ ^1P^o$ (87)
1838. 00 1840. 00	A	10	0. 78	7. 49	2-3	$3p^2 \ ^1D - 5d \ ^3F^o$ (65)	2289. 61	A	10	1. 90	7. 29	0-1	$3p^2 \ ^1S - 5d \ ^3D^o$ (88)
1817. 87	A	2b	0. 78	7. 57	2-1	$3p^2 \ ^1D - 5d \ ^1P^o$ (66)	2278. 30	A	7	1. 90	7. 32	0-1	$3p^2 \ ^1S - 6s \ ^3P^o$ (89)
1809. 05 1814. 09	A	30	0. 78	7. 60	2-3	$3p^2 \ ^1D - 6d \ ^3D^o$ (67)	2259. 58	A	7	1. 90	7. 36	0-1	$3p^2 \ ^1S - 6s \ ^1P^o$ (90)
1814. 02	A	50	0. 78	7. 58	2-3	$3p^2 \ ^1D - 5d \ ^1F^o$ (68)	2177. 30	A	8b	1. 90	7. 57	0-1	$3p^2 \ ^1S - 5d \ ^1P^o$ (91)
1808. 48	A	4b	0. 78	7. 60	2-1	$3p^2 \ ^1D - 7s \ ^3P^o$ (69)	2167. 74	A	7	1. 90	7. 59	0-1	$3p^2 \ ^1S - 6d \ ^3D^o$ (92)
1797. 33	A	3	0. 78	7. 65	2-1	$3p^2 \ ^1D - 6d \ ^3P^o$ (70)	2163. 78	A	10b	1. 90	7. 60	0-1	$3p^2 \ ^1S - 7s \ ^3P^o$ (93)
1799. 14	A	10	0. 78	7. 64	2-1	$3p^2 \ ^1D - 7s \ ^1P^o$ (71)	2147. 91	A	3	1. 90	7. 65	0-1	$3p^2 \ ^1S - 6d \ ^3P^o$ (94)
1790. 28	A	4	0. 78	7. 67	2-2	$3p^2 \ ^1D - 6d \ ^1D^o$ (72)	2150. 43	A	5	1. 90	7. 64	0-1	$3p^2 \ ^1S - 7s \ ^1P^o$ (95)
1783. 23 1784. 11	A	8	0. 78	7. 70	2-3	$3p^2 \ ^1D - 6d \ ^3F^o$ (73)	2094. 20	A	2	1. 90	7. 79	0-1	$3p^2 \ ^1S - 8s \ ^1P^o$ (96)

Si II

I P 16.27 Anal B List A Sept. 1948

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Si II

Si II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1816. 94‡	B	8	0. 04	6. 83	1½-2½	3p ¹ P°-3p ¹ D	1711. 0	C	6d?	6. 83	14. 04		3p ² D-5f ¹ F° (10)
1808. 01	B	7	0. 00	6. 83	½-1½	(1)							
1817. 42	B	2	0. 04	6. 83	1½-1½								
1533. 44	B	5	0. 04	8. 09	1½-½	3p ¹ P°-4s ¹ S	1563. 1	C	3d?	6. 83	14. 73		3p ² D-6f ¹ F° (11)
1526. 70	B	4	0. 00	8. 09	½-½	(2)							
1309. 28	A	2	0. 04	9. 46	1½-½	3p ¹ P°-3p ¹ S	1485. 4	C	3	6. 83	15. 14		3p ² D-7f ¹ F° (12)
1304. 41	A	1	0. 00	9. 46	½-½	(3)							
1265. 04	C	10	0. 04	9. 80	1½-2½	3p ¹ P°-3d ¹ D	1438. 9	C	1	6. 83	15. 41		3p ² D-8f ¹ F° (13)
1260. 66	C	8	0. 00	9. 79	½-1½	(4)							
1194. 50	D	5	0. 04	10. 37	1½-1½	3p ¹ P°-3p ¹ P	1408. 8	C	0	6. 83	15. 59		3p ² D-9f ¹ F° (14)
1193. 31	D	3	0. 00	10. 35	½-½	(5)							
1197. 42	D	3	0. 04	10. 35	1½-½								
1190. 42	D	4	0. 00	10. 37	½-1½								
993. 09	C	1	0. 04	12. 47	1½-2½	3p ¹ P°-4d ¹ D	2604. 44	C	2	8. 09	12. 82	½-1½	4s ² S-5p ¹ P° (15)
990. 32	C	0	0. 00	12. 47	½-1½	(6)	2606. 09	C	1	8. 09	12. 82	½-½	
							2058. 532	C	1	8. 09	14. 08	½-1½	4s ² S-6p ¹ P° (16)
							2058. 917	C	0	8. 09	14. 08	½-½	
1350. 07	E	4	(5. 48	14. 62)	2½-2½	3p ² 4P-4s ¹ P°							
1350. 58	E	3	(5. 46	14. 60)	1½-1½	(7)	2905. 70	C	3	9. 80	14. 04	2½-1½	3d ² D-5f ¹ F° (17)
1353. 75	E	3	(5. 48	14. 60)	2½-1½		2904. 29	C	2	9. 79	14. 04		
1352. 68	E	3	(5. 46	14. 58)	1½-½								
1346. 92	E	3	(5. 46	14. 62)	1½-2½		2501. 99	C	1	9. 80	14. 73	2½-1½	3d ² D-6f ¹ F° (18)
1348. 55	E	3	(5. 44	14. 60)	½-1½		2500. 96	C	1	9. 79	14. 73	1½-2½	
1251. 16	E	4	(5. 48	15. 34)	2½-1½	3p ² 4P-3p ² 4S°							
1248. 40	E	3	(5. 46	15. 34)	1½-1½	(8)	2726. 74	C	2	10. 03	14. 56	1½-½	4p ² P°-7s ² S (19)
1246. 73	E	3	(5. 44	15. 34)	½-1½		2722. 29	C	1	10. 02	14. 56	½-½	
Air													
2072. 61	C	10	6. 83	12. 78	2½-	3p ² D-4f ¹ F°	2682. 27	C	2	10. 03	14. 63	1½-	4p ² P°-6d ² D (20)
2071. 94	C	8	6. 83	12. 78	1½-2½	(9)	2677. 98	C	1	10. 02	14. 63	½-1½	

Si III

I P 33.32 Anal B List D July 1947

REFERENCES

- A I. S. Bowen, Phys. Rev. 39, 8 (1932). W L, I, T
 B A. Fowler, Phil. Trans. Roy. Soc. London [A] 225, 1 (1925). W L, I

Si III

Si III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1895. 46	A	2	0.00	6.51	0-1	$3s^2 \ ^1S - 3p \ ^3P^o$ (1)	Vac 997. 40	A	5	6.55	18.92	2-1	$3p \ ^3P^o - 4s \ ^1S$ (6)
1206. 52	A	10	0.00	10.23	0-1	$3s^2 \ ^1S - 3p \ ^3P^o$ (2)	994. 82	A	5	6.51	18.92	1-1	
566. 54	A	3	0.00	21.79	0-1	$3s^2 \ ^1S - 4p \ ^3P^o$ (3)	993. 54	A	5	6.50	18.92	0-1	
							Air 2559. 22	B	7	10.23	15.05	1-2	$3p \ ^1P^o - 3p^2 \ ^1D$ (7)
*1298. 90	A	8	{ 6.55 { 6.51 16.05 16.02		2-2 1-1	$3p \ ^3P^o - 3p^2 \ ^3P$ (4)	2541. 83	B	10	10.23	15.09	1-2	$3p \ ^1P^o - 3d \ ^1D$ (8)
1303. 30	A	7	6.55	16.02	2-1		Vac 1417. 20	A	5	10.23	18.94	1-0	$3p \ ^1P^o - 3p^2 \ ^1S$ (9)
1301. 12	A	7	6.51	16.00	1-0								
1294. 55	A	7	6.51	16.05	1-2								
1296. 72	A	7	6.50	16.02	0-1								
1113. 20	A	9	6.55	17.63	2-	$3p \ ^3P^o - 3d \ ^3D$ (5)	1312. 61	A	4	10.23	19.64	1-0	$3p \ ^1P^o - 4s \ ^1S$ (10)
1109. 95	A	8	6.51	17.63	1-								
1108. 35	A	7	6.50	17.64	0-1								

Si IV

I P 44.95 Anal B List D Sept. 1948

REFERENCES

- A B. Edlén and J. Söderqvist, Zeit. Phys. 87, 217 (1933). W L, I, T
 B R. A. Millikan and I. S. Bowen, Phys. Rev. 23, 17 (1924). W L, I

Si IV

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1393. 73	A	10	0.00	8.86	$\frac{1}{2}-1\frac{1}{2}$	$3s \ ^2S - 3p \ ^3P^o$ (1)
1402. 73	A	8	0.00	8.80	$\frac{1}{2}-\frac{1}{2}$	
457. 7	B	(3)	0.00	26.97	$\frac{1}{2}-$	$3s \ ^2S - 4p \ ^3P^o$ (2)
1128. 326	A	5	8.86	19.80	$1\frac{1}{2}-2\frac{1}{2}$	$3p \ ^1P^o - 3d \ ^3D$ (3)
1122. 495	A	4	8.80	19.80	$\frac{1}{2}-1\frac{1}{2}$	
818. 121	A	4	8.86	23.95	$1\frac{1}{2}-\frac{1}{2}$	$3p \ ^3P^o - 4s \ ^1S$ (4)
815. 060	A	3	8.80	23.95	$\frac{1}{2}-\frac{1}{2}$	

PHOSPHORUS

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IP 10.9 Anal B List C Nov. 1947

REFERENCES

- A H. A. Robinson, Phys. Rev. 49, 297 (1936). W L, (I), T
 B C. C. Kiess, Bur. Std. J. Research 8, 393, RP425 (1932). W L, I, T

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IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1774. 942†	A	(12)	0.00	6.96	1½-2½	3p ³ 4S°-4s 4P	1685. 957	A	(11)	1.40	8.73	2½-3½	3p ³ 2D°-3d 2F†
1782. 830	A	(12)	0.00	6.92	1½-1½		1694. 055	A	(10)	1.40	8.69	1½-2½	
1787. 686	A	(12)	0.00	6.91	1½-½								
1679. 730	A	(12)	0.00	7.35	1½-2½	3p ³ 4S°-3p ⁴ 4P							
1674. 661	A	(12)	0.00	7.37	1½-1½								
1671. 720	A	(6)	0.00	7.38	1½-½								
Air													
2223. 35	B	3	1.40	6.96	2½-2½	3p ³ 2D°-4s 4P	2535. 65	B	50	2.31	7.18	1½-1½	3p ³ 2P°-4s 2P
2234. 99	B	3	1.40	6.92	1½-1½		2553. 28	B	40	2.31	7.14	½-½	
2235. 77	B	5	1.40	6.92	2½-1½		2554. 93	B	30	2.31	7.14	1½-½	
2222. 59	B	0	1.40	6.96	1½-2½		2534. 01	B	25	2.31	7.18	½-1½	
2136. 199	A	(11)	1.40	7.18	2½-1½	3p ³ 2D°-4s' 2P	2154. 081	A	(12)	2.31	8.04	1½-	3p ³ 2P°-4s' 2D
2149. 108	A	(12)	1.40	7.14	1½-½		2152. 950	A	(11)	2.31	8.04	½-	
2135. 466	A	(10)	1.40	7.18	1½-1½								
Vac													
1859. 401	A	(12)	1.40	8.04	2½-	3p ³ 2D°-4s' 2D	2033. 489	A	(10)	2.31	8.38	1½-1½	3p ³ 2P°-3p ⁴ 2P
1858. 924	A	(12)	1.40	8.04	1½-		2023. 472	A	(6)	2.31	8.41	½-½	
							2024. 546	A	(6)	2.31	8.41	1½-½	
							2032. 447	A	(8)	2.31	8.38	½-1½	

P II

IP 19.57 Anal B List C Oct. 1947

REFERENCES

- A H. A. Robinson, Phys. Rev. **49**, 297 (1936). W L, I, T
 B I. S. Bowen, Phys. Rev. **29**, 510 (1927). W L, (I), T

P II

P II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1542. 321†	A	15	0.06	8.06	2-3	$3p^2 \ ^3P - 3p^3 \ ^3D^o$	2606. 01	B	(3)	8.06	12.80	3-3	$3p^4 \ ^3D^o - 4p \ ^3D$
1535. 955	A	12	0.02	8.06	1-2	(1)	2626. 16	B	(4)	8.06	12.76	2-2	
1532. 558	A	12	0.00	8.06	0-1		2636. 78	B	(3)	8.06	12.74	1-1	
1543. 144	A	12	0.06	8.06	2-2		2628. 55	B	(2)	8.06	12.76	3-2	
1536. 459	A	12	0.02	8.06	1-1		2638. 18	B	(2)	8.06	12.74	2-1	
1543. 638	A	2	0.06	8.06	2-1		2603. 71	B	(2)	8.06	12.80	2-3	
							2624. 76	B	(3)	8.06	12.76	1-2	
1310. 685	A	10	0.06	9.48	2-2	$3p^2 \ ^3P - 3p^3 \ ^3P^o$							
1304. 688	A	10	0.02	9.48	1-1	(2)	2484. 152	A	8	8.06	13.03	3-2	$3p^3 \ ^3D^o - 4p \ ^3P$
1309. 877	A	10	0.06	9.48	2-1		2497. 328	A	8	8.06	13.00	2-1	(5)
1304. 484	A	10	0.02	9.48	1-0		2500. 922	A	7	8.06	12.99	1-0	
1305. 531	A	10	0.02	9.48	1-2		2481. 984	A	3	8.06	13.03	2-2	
1301. 878	A	10	0.00	9.48	0-1		2496. 003	A	7	8.06	13.00	1-1	
							2480. 704	A	0	8.06	13.03	1-2	
1153. 997	A	10	0.06	10.76	2-2	$3p^2 \ ^3P - 4s \ ^3P^o$							
1155. 020	A	10	0.02	10.71	1-1	(3)							
1159. 085	A	10	0.06	10.71	2-1								
1156. 968	A	10	0.02	10.69	1-0		2281. 003	A	10	10.76	16.17	2-	$4s \ ^3P^o - 5$
1149. 960	A	10	0.02	10.76	1-2								(6)
1152. 803	A	10	0.00	10.71	0-1								
							2285. 114	A	10	10.97	16.37	1-	$4s \ ^1P^o - 19$
													(7)

P III

IP 30.03 Anal A List D April 1949

REFERENCES

- A H. A. Robinson, Phys. Rev. **51**, 728 (1937). W L, I, T
 I. S. Bowen, Phys. Rev. **39**, 13 (1932). T

P III**P III**

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
*1344. 343	A	15	0.07	9.25	1½ - 2½	3p ¹ P° - 3p ¹ D	847. 658	A	3d	7.09	21.66	2½ - 3½	3p ² ⁴ P - 3d ¹ D°†
1334. 866	A	10	0.00	9.25	½ - 1½	(1)	845. 656	A	1	7.05	21.65	1½ - 2½	
*1344. 900	A	10	0.07	9.25	1½ - 1½		844. 635	A	1	7.03	21.64	½ - 1½	
1003. 592	A	10	0.07	12.37	1½ - ½	3p ¹ P° - 3p ² S	1502. 273	A	10	9.25	17.47	2½ - 1½	3p ² ¹ D - 4p ¹ P°
998. 000	A	10	0.00	12.37	½ - ½	(2)	1504. 719	A	9	9.25	17.45	½ - ½	
918. 706	A	5	0.07	13.51	1½ - 1½	3p ¹ P° - 3p ² P	1501. 551	A	7	9.25	17.47	½ - 1½	
917. 130	A	4	0.00	13.46	½ - ½	(3)							
921. 863	A	5	0.07	13.46	½ - ½								
913. 989	A	5	0.00	13.51	½ - 1½								
859. 667	A	8	0.07	14.43	1½ - 2½	3p ¹ P° - 3d ¹ D	1380. 464	A	10	9.25	18.19	2½ - 2½	3p ² ¹ D - 3p ² D°
855. 618	A	5	0.00	14.43	½ - 1½	(4)	1381. 111	A	10	9.25	18.19	½ - 1½	
							1381. 633	A	8	9.25	18.19	2½ - 1½	
							1379. 873	A	5	9.25	18.19	½ - 2½	

P IV

I P 51.15 Anal A List D April 1949

REFERENCES

- A I. S. Bowen, Phys. Rev. **39**, 10 (1932). W L, I, T
H. A. Robinson, Phys. Rev. **51**, 731 (1937). T
H. Kayser, *Tabelle der Hauptlinien der Linienspektren aller Elemente*, 2d Edition by R. Ritschl, p. 248
(Julius Springer, Berlin, 1939). (I)

P IV**P IV**

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
950. 669	A	(25)	0.00	12.99	0-1	3s ² ¹ S - 3p ¹ P° (1)	827. 932	A	8	8.47	23.38	2-	3p ¹ P° - 3d ¹ D
							824. 733	A	7	8.41	23.38	1-2, 1	
							823. 177	A	6	8.38	23.38	0-1	
*1030. 545	A	8	8.47	20.45	2, 1-2, 1	3p ¹ P° - 3p ² P (2)	631. 765	A	7	8.47	28.01	2-1	3p ¹ P° - 4s ¹ S
1035. 542	A	7	8.47	20.39	2-1		629. 914	A	6	8.41	28.01	1-1	
1033. 135	A	7	8.41	20.36	1-0		628. 983	A	5	8.38	28.01	0-1	
1025. 579	A	7	8.41	20.45	1-2								
1028. 131	A	7	8.38	20.39	0-1								
							1888. 55	A	8	12.99	19.52	1-2	3p ¹ P° - 3d ¹ D (5)

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S I

I P 10.31 Anal A List B Dec. 1947

REFERENCES

- A** J. E. Ruedy, Phys. Rev. **44**, 757 (1933). W L, I, T
B. Edlén, Phys. Rev. **62**, 434 (1942); and unpublished material (Nov. 1946). T

S II

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S II

I P 23.3 Anal B List C Oct. 1947

REFERENCES

- A S. B. Ingram, Phys. Rev. **32**, 172 (1928). W L, I, T
 B M. Gilles, Ann. de Phys. [10] **15**, 301 (1931). W L, (I), T
 A. Hunter, Phil. Trans. Roy. Soc. London [A] **233**, 303 (1934). T

S II

S II

S III

I P 34.9 Anal B List C Oct. 1947

REFERENCES

- A S. B. Ingram, Phys. Rev. **33**, 907 (1929). W L, I, T
 B H. A. Robinson, Phys. Rev. **52**, 724 (1937). W L, I, T
 A. Hunter, Phil. Trans. Roy. Soc. London [A] **233**, 303 (1934). T

S III

S III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1200. 97	A	4	0.10	10.38	2-3	$3p^2 \ ^3P - 3p^2 \ ^3D^o$	738. 474	B	4	1.40	18.11	2-1	$3p^2 \ ^1D - 4s \ ^3P^o \ d$
1194. 02	A	4	0.04	10.38	1-2	(1)							(11)
1190. 17	A	2	0.00	10.37	0-1		729. 529	B	4	1.40	18.32	2-1	$3p^2 \ ^1D - 4s \ ^1P^o$
1201. 71	A	2	0.10	10.38	2-2								(12)
1194. 40	A	3	0.04	10.37	1-1								
1202. 10	A	0	0.10	10.37	2-1								
1021. 32	A	2	0.10	12.19	2-2	$3p^2 \ ^3P - 3p^2 \ ^3P^o$	836. 315	B	4	3.35	18.11	0-1	$3p^2 \ ^1S - 4s \ ^3P^o$
*1015. 51	A	2	0.04	12.19	1-1	(2)							(13)
1021. 10	A	1	0.10	12.19	2-1		824. 887	B	4	3.35	18.32	0-1	$3p^2 \ ^1S - 4s \ ^1P^o$
*1015. 51	A	2	0.04	12.19	1-0								
1015. 76	A	1	0.04	12.19	1-2								
1012. 49	A	3	0.00	12.19	0-1								
735. 251	B	4	0.10	16.89	2-1	$3p^2 \ ^3P - 3p^2 \ ^1P^o$	2863. 53	A	5	21.07	25.38	3-4	$4p \ ^3D - 4d \ ^3F^o \ d$
732. 376	B	5	0.04	16.89	1-1	(3)	2856. 02	A	4	20.99	25.32	2-3	(15)
730. 783	B	0	0.00	16.89	0-1		2872. 00	A	2	20.96	25.26	1-2	
728. 69	A	3	0.10	17.04	2-1	$3p^2 \ ^3P - 3p^2 \ ^3S^o$	2904. 31	A	6	21.07	25.32	3-3	
725. 86	A	3	0.04	17.04	1-1	(4)							
724. 29	A	3	0.00	17.04	0-1		2756. 89	A	8	21.07	25.54	3-3	$4p \ ^3D - 4d \ ^3D^o \ d$
702. 78	P		0.10	17.67	2-2	$3p^2 \ ^3P - 3d \ ^3P^o$	2731. 10	A	7	20.99	25.51	2-2	(16)
*700. 15	A	3	0.04	17.67	1-1	(5)	2718. 88	A	7	20.96	25.50	1-1	
702. 82	P		0.10	17.67	2-1		2775. 25	A	5	21.07	25.51	3-2	
700. 29	A	3	0.04	17.67	1-0		2741. 01	A	5	20.99	25.50	2-1	
*700. 15	A	3	0.04	17.67	1-2		2496. 24	A	6	21.07	26.01	3-2	$4p \ ^3D - 5s \ ^3P^o \ d$
698. 73	A	2	0.00	17.67	0-1		2508. 15	A	7	20.99	25.92	2-1	(17)
683. 47	A	1	0.10	18.17	2-2	$3p^2 \ ^3P - 4s \ ^3P^o$	2499. 08	A	6	20.96	25.90	1-0	
685. 35	A	0	0.10	18.11	2-1	(6)	2460. 50	A	5	20.99	26.01	2-2	
683. 07	A	0	0.04	18.11	1-0		2489. 59	A	5	20.96	25.92	1-1	
*680. 95	A	2	0.04	18.17	1-2								
*681. 50	A	1	0.00	18.11	0-1		2964. 80	A	4	21.38	25.54	2-3	$4p \ ^3P - 4d \ ^3D^o \ d$
680. 69	A	2	0.10	18.24	2-3	$3p^2 \ ^3P - 3d \ ^3D^o$	2950. 23	A	3	21.33	25.51	1-2	(18)
678. 46	A	2	0.04	18.23	1-2	(7)	2985. 98	A	6	21.38	25.51	2-2	
677. 75	A	2	0.00	18.22	0-1		2665. 40	A	7	21.38	26.01	2-2	$4p \ ^3P - 5s \ ^3P^o \ d$
*680. 95	A	2	0.10	18.23	2-2		2691. 68	A	5	21.33	25.92	1-1	(19)
679. 11	A	2	0.04	18.22	1-1		2721. 40	A	5	21.38	25.92	2-1	
*681. 50	A	1	0.10	18.22	2-1		2702. 76	A	5	21.33	25.90	1-0	
1077. 835	B	8	1.40	12.86	2-2	$3p^2 \ ^1D - 3p^2 \ ^1D^o$	2636. 88	A	4	21.33	26.01	1-2	
796. 692	B	4	1.40	16.89	2-1	$3p^2 \ ^1D - 3p^2 \ ^1P^o$	2680. 47	A	4	21.31	25.92	0-1	(20)
788. 984	B	4	1.40	17.04	2-1	$3p^2 \ ^1D - 3p^2 \ ^3S^o$							

S IV

I P 47.1 Anal C List C Sept. 1948

REFERENCES

- A I. S. Bowen, Phys. Rev. **31**, 37 (1928). W L, I, T
 B R. A. Millikan and I. S. Bowen, Phys. Rev. **35**, 600 (1925). W L, I, T
 C I. S. Bowen, Phys. Rev. **39**, 13 (1932). W L, I, T

S IV

S IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1072. 992	A	6	0. 12	11. 62	1½-2½	3p ² P° - 3p ² D	803. 996	C	4	(8. 98	24. 33)	2½-1½	3p ² P - 3p ² S°
1062. 672	A	6	0. 00	11. 62	½-1½	(1)	800. 477	C	4	(8. 91	24. 33)	½-1½	(6)
1073. 522	A	4	0. 12	11. 62	1½-1½		798. 277	C	3	(8. 87	24. 33)	½-1½	
815. 97	B	5	0. 12	15. 25	1½- ½	3p ² P° - 3p ² S	666. 114	C	4	(8. 98	27. 51)	2½-2½	3p ² P - 3d ⁴ P°
809. 69	B	4	0. 00	15. 25	½- ½	(2)	664. 822	C	3	(8. 98	27. 55)	2½-1½	(7)
750. 23	B	5	0. 12	16. 57	1½-1½	3p ² P° - 3p ² P	663. 707	C	3	(8. 91	27. 51)	1½-2½	
748. 40	B	5	0. 00	16. 50	½- ½	(3)	660. 945	C	3	(8. 87	27. 55)	½-1½	
753. 76	B	5	0. 12	16. 50	1½- ½		655. 553	C	4	(8. 98	27. 81)	2½-3½	3p ² P - 3d ⁴ D°†
744. 92	B	5	0. 00	16. 57	½- ½		653. 560	C	4	(8. 91	27. 80)	1½-2½	(8)
661. 42	B	6	0. 12	18. 78	1½-2½	3p ² P° - 3d ² D	652. 523	C	3	(8. 87	27. 79)	½-1½	
657. 34	B	5	0. 00	18. 78	½-1½	(4)							
551. 17	B	2	0. 00	22. 40	½- ½	3p ² P° - 4s ² S							
						(5)							

S V

I P 72.2 Anal C List C Sept. 1948

REFERENCE

- A I. S. Bowen, Phys. Rev. **39**, 8 (1932). W L, I, T

S V

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 786.476	A	8	0.00	15.70	0-1	$3s^1 S - 3p^1 P^o$ (1)
*854.792	A	7	(10.39 10.30	24.84 24.74)	2-2 1-1	$3p^1 P^o - 3p^1 P$ (2)
860.462	A	5	(10.39 10.30	24.74 24.69)	2-1 1-0	
857.872	A	5	(10.30 10.30	24.69 24.84)	1-0 1-2	
849.241	A	6	(10.30 10.26	24.84 24.74)	1-2 0-1	
852.185	A	5	(10.26 10.39	24.74 29.01)	0-1 2-3	
*663.155	A	5	(10.39 10.30	29.01 29.01)	1-2 0-1	$3p^1 P^o - 3d^1 D$ (3)
*659.853	A	4	(10.30 10.26	29.01 29.01)	2-2 1-1	
658.262	A	3	(10.39 10.30	29.01 29.01)	0-1 1-1	
*663.155	A	5	(10.39 10.30	29.01 29.01)	2-2 1-1	
*659.853	A	4	(10.30 10.26	29.01 29.01)	2-1 0-1	
*663.155	A	5	(10.39 10.30	29.01 29.01)	3p^1 P^o - 4s^1 S (4)	
439.65	A	1	(10.39 10.30	38.48 38.48)	2-1 1-1	
438.19	A	1	(10.26 10.30	38.48 38.48)	0-1 1-1	
437.37	A	1	(10.26 10.30	38.48 38.48)	3p^1 P^o - 4s^1 S (4)	

S VI

I P 87.67 Anal B List C Sept. 1948

REFERENCES

- A H. A. Robinson, Phys. Rev. **52**, 724 (1937). W L, I, T
 B I. S. Bowen and R. A. Millikan, Phys. Rev. **25**, 295 (1925). (I), T

S VI

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 933.382	A	(5)	0.00	13.23	$\frac{1}{2}-\frac{1}{2}$	$3s^1 S - 3p^1 P^o$ (1)
944.517	A	(4)	0.00	13.07	$\frac{1}{2}-\frac{1}{2}$	
248.985	A	4	0.00	13.23	$\frac{1}{2}-\frac{1}{2}$	$3s^1 S - 4p^1 P^o$ (2)
249.271	A	4	0.00	13.07	$\frac{1}{2}-\frac{1}{2}$	
712.682	A	(2)	13.23	30.55	$1\frac{1}{2}-2\frac{1}{2}$	$3p^1 P^o - 3d^1 D$ (3)
706.480	A	(1)	13.07	30.54	$\frac{1}{2}-\frac{1}{2}$	
712.844	A	(0)	13.23	30.54	$1\frac{1}{2}-1\frac{1}{2}$	
390.859	A	8	13.23	44.81	$1\frac{1}{2}-\frac{1}{2}$	$3p^1 P^o - 4s^1 S$ (4)
388.940	A	6	13.07	44.81	$\frac{1}{2}-\frac{1}{2}$	
464.654	A	10	30.55	57.11		$3d^1 D - 4f^1 F^o$ (5)

CHLORINE

Cl I

I P 12.9 Anal A List A Jan. 1948

REFERENCES

- A L. A. Turner, Phys. Rev. **27**, 397 (1926). W L, I, T
 C. C. Kiess, Bur. Std. J. Research **10**, 827, RP570 (1933). T
 J. B. Green and J. T. Lynn, Phys. Rev. **69**, 165 (1946). T

Cl I

IA	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
*1389. 9	A	4	0.00	8.88	1½ - 2½	3p ⁴ 3P° - 4s 4P
1396. 5	A	3	0.11	8.95	½ - 1½	(1)
1379. 6	A	5	0.00	8.95	1½ - 1½	
*1389. 9	A	4	0.11	8.99	½ - ½	
1347. 2‡	A	5	0.00	9.16	1½ - 1½	3p ⁴ 3P° - 4s 3P
1351. 7	A	3	0.11	9.24	½ - ½	(2)
1335. 8	A	2	0.00	9.24	1½ - ½	
1363. 5	A	5	0.11	9.16	½ - ½	

Cl II

IP 23.70 Anal A List D Dec. 1948

REFERENCE

A See: C. C. Kies and T. L. de Bruin, J. Research Natl. Bur. Std. 23, 443, RP1244 (1939). W L, I, T

Cl II

Cl II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1071.05† 1071.76 1063.83 1079.08	A (20) A (10) A (10) A (15)		0.00 0.09 0.00 0.09	11.53 11.60 11.60 11.53	2-2 1-1 2-1 1-2	$3p^4 \ ^3P - 3p^4 \ ^3P^o \ d^{\pm}$ (1)	Air 2564.84 2565.29 2251.50 2250.96 2253.16	A A A A A	20 15 40 20 30	14.79 14.79 14.79 14.79 14.79	19.60 19.60 20.27 20.27 20.27	3-3 2-2 3-2 2-2 1-2	$3d \ ^3D^o - 4p'' \ ^3D^{\pm}$ (8)
888.07 893.56 895.95	A (4) A (3) A (3)		0.00 0.09 0.12	13.90 13.90 13.90	2-1 1-1 0-1	$3p^4 \ ^3P - 4s \ ^1S^o$ (2)							$3d \ ^3D^o - 1$ (9)
864.67 872.00	A (5) A (0)		0.00 0.12	14.28 14.28	2-1 0-1	$3p^4 \ ^3P - 3p^4 \ ^1P^o$ (3)	2502.75 2498.53 2496.04	A A A	40 30 20	15.89 15.88 15.88	20.82 20.82 20.82	3-2 2-2 1-2	$4p \ ^3P - 6s \ ^1S^o$ (10)
834.67 839.63 841.41	A (10) A (2) A (4)		0.00 0.09 0.12	14.79 14.79 14.79	2-3 1-2 0-1	$3p^4 \ ^3P - 3d \ ^3D^{\pm}$ (4)	*2434.10 *2430.16 2427.79 *2434.10 *2430.16	A A A A A	50 30 20 50 30	15.89 15.88 15.88 15.89 15.88	20.96 20.96 20.96 20.96 20.96	3-4 2-3 1-2 3-3 2-2	$4p \ ^3P - 5d \ ^3D^o$ (11)
788.75 793.34 795.36 789.01 793.47	A (4) A (3) A (2) A (7) A (3)		0.00 0.09 0.12 0.00 0.09	15.65 15.65 15.64 15.65 15.64	2-3 1-2 0-1 2-2 1-1	$3p^4 \ ^3P - 4s' \ ^1D^o$ (5)							
Air 2688.04 2676.95 2672.19							*2667.36 2666.46 *2667.36	A A A	40 20 40	16.27 16.27 16.27	20.89 20.89 20.89	2-1 1-1 0-1	$4p \ ^3P - 6s \ ^1S^o$ (12)
2658.74	A 100	14.28	18.92	1-2	$3p^4 \ ^1P^o - 4p' \ ^1D$ (7)		2549.85 2546.94 2544.84 2547.76 2543.98	A A A A A	50 20 15 12 10	16.27 16.27 16.27 16.27 16.27	21.11 21.11 21.12 21.11 21.12	2-3 1-2 0-1 2-2 1-1	$4p \ ^3P - 5d \ ^3D^o$ (13)
							2906.25	A	20	17.96	22.20	1-1	$4p' \ ^1P - 4d' \ ^1P^o$ (14)

Strongest Unclassified Lines of Cl II

2912.06 2763.88 2754.10 2648.19 2615.13	A A A A A	15 10 25 10 10					2450.86 2452.30 2445.34 2424.01 2412.48	A A A A A	10 10 20 10 10				
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Cl III

IP 39.7 Anal B List C Nov. 1947

REFERENCES

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 B I. S. Bowen, Phys. Rev. 45, 401 (1934). W L, I, T

ARGON

A I

I P 15.69 Anal A List D April 1948

REFERENCES

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 K. W. Meissner, Zeit. Phys. **39**, 172 (1926); **40**, 839 (1927). T
 E. Rasmussen, Dissertation, p. 22, Copenhagen (1932); Zeit. Phys. **75**, 695 (1932). T
 W. F. Meggers and C. J. Humphreys, Bur. Std. J. Research **10**, 437, RP540 (1933). T
 C. J. Humphreys, J. Research Nat. Bur. Std. **20**, 26, RP1061 (1938). T
 B. Edlén, unpublished material (April 1948). T

A I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1066. 660	A	15	0.00	11.57	0-1	$3p^6 ^1S - 4s [1\frac{1}{2}]^o$ (1)
1048. 218†	A	25	0.00	11.78	0-1	$3p^6 ^1S - 4s' [\frac{5}{2}]^o$ (2)
894. 30	A	4	0.00	13.80	0-1	$3p^6 ^1S - 3d [\frac{5}{2}]^o$ (3)
876. 06	A	4	0.00	14.09	0-1	$3p^6 ^1S - 3d [1\frac{3}{4}]^o$ (4)

A II

I P 27.5 Anal B List C April 1948

REFERENCES

- A J. C. Boyce, Phys. Rev. **48**, 397 (1935). W L, I, T
 B A. H. Rosenthal, Ann. der Phys. [5] **4**, 49 (1930). W L, I
 See C. E. Moore, *Atomic Energy Levels*, Circ. Nat. Bur. Std. **467**, Vol. I, p. 216 (1949). T

A II

A II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
919. 78†	A	15	0.00	13. 42	$1\frac{1}{2}-\frac{1}{2}$	$3p^6 \ ^3P^o - 3p^6 \ ^3S$	573. 360	A	6	0.00	21. 53	$1\frac{1}{2}-1\frac{1}{2}$	$3p^6 \ ^3P^o - 3d'' \ ^3P$
932. 046	A	10	0.18	13. 42	$\frac{1}{2}-\frac{1}{2}$	(1)	576. 731	A	5	0.18	21. 58	$\frac{1}{2}-\frac{1}{2}$	(11)
754. 817	A	3	0.00	16. 35	$1\frac{1}{2}-2\frac{1}{2}$	$3p^6 \ ^3P^o - 3d \ ^4D$	572. 015	A	5	0.00	21. 58	$1\frac{1}{2}-\frac{1}{2}$	
762. 192	A	2	0.18	16. 37	$\frac{1}{2}-1\frac{1}{2}$	(2)	578. 107	A	4	0.18	21. 53	$\frac{1}{2}-1\frac{1}{2}$	
744. 920	A	5	0.00	16. 57	$1\frac{1}{2}-2\frac{1}{2}$	$3p^6 \ ^3P^o - 4s \ ^4P^\dagger$	519. 326	A	6	0.00	23. 77	$1\frac{1}{2}-2\frac{1}{2}$	$3p^6 \ ^3P^o - 4d \ ^3D^\dagger$
748. 193	A	4	0.18	16. 68	$\frac{1}{2}-1\frac{1}{2}$	(3)	522. 791	A	4	0.18	23. 79	$\frac{1}{2}-1\frac{1}{2}$	(12)
740. 263	A	12	0.00	16. 68	$1\frac{1}{2}-1\frac{1}{2}$								
745. 318	A	5	0.18	16. 74	$\frac{1}{2}-\frac{1}{2}$								
723. 353	A	14	0.00	17. 07	$1\frac{1}{2}-1\frac{1}{2}$	$3p^6 \ ^3P^o - 4s \ ^3P$	1941. 062	A	2	13. 42	19. 78	$\frac{1}{2}-1\frac{1}{2}$	$3p^6 \ ^3S - 4p \ ^3P^o$
725. 542	A	9	0.18	17. 19	$\frac{1}{2}-\frac{1}{2}$	(4)	1961. 356	A	2	13. 42	19. 72	$\frac{1}{2}-\frac{1}{2}$	(13)
718. 083	A	4	0.00	17. 19	$1\frac{1}{2}-\frac{1}{2}$		1574. 985	A	4	13. 42	21. 26	$\frac{1}{2}-1\frac{1}{2}$	$3p^6 \ ^3S - 4p' \ ^3P^o$
730. 929	A	8	0.18	17. 07	$\frac{1}{2}-1\frac{1}{2}$		1560. 188	A	3	13. 42	21. 33	$\frac{1}{2}-\frac{1}{2}$	(14)
698. 760	A	4	0.00	17. 67	$1\frac{1}{2}-2\frac{1}{2}$	$3p^6 \ ^3P^o - 3d \ ^4F^\dagger$							
704. 516	A	3	0.18	17. 70	$\frac{1}{2}-1\frac{1}{2}$	(5)							
671. 854	A	10	0.00	18. 37	$1\frac{1}{2}-2\frac{1}{2}$	$3p^6 \ ^3P^o - 4s' \ ^2D$	2942. 90	B	8	17. 07	21. 26	$1\frac{1}{2}-1\frac{1}{2}$	$4s \ ^3P - 4p' \ ^3P^o$
679. 410	A	8	0.18	18. 35	$\frac{1}{2}-1\frac{1}{2}$	(6)	2979. 05	B	6	17. 19	21. 33	$\frac{1}{2}-\frac{1}{2}$	
672. 849	A	3	0.00	18. 35	$1\frac{1}{2}-1\frac{1}{2}$		2891. 61	B	5	17. 07	21. 33	$1\frac{1}{2}-\frac{1}{2}$	
666. 014	A	10	0.00	18. 54	$1\frac{1}{2}-2\frac{1}{2}$	$3p^6 \ ^3P^o - 3d \ ^3F$	3033. 52	B	6	17. 19	21. 26	$\frac{1}{2}-1\frac{1}{2}$	
661. 868	A	15	0.00	18. 65	$1\frac{1}{2}-2\frac{1}{2}$	$3p^6 \ ^3P^o - 3d \ ^3D$							
670. 947	A	10	0.18	18. 58	$\frac{1}{2}-1\frac{1}{2}$	(8)	2844. 12	B	2	17. 07	21. 41	$1\frac{1}{2}-2\frac{1}{2}$	$4s \ ^3P - 4p' \ ^3D^o$
664. 558	A	6	0.00	18. 58	$1\frac{1}{2}-1\frac{1}{2}$		2932. 60	B	4	17. 19	21. 40	$\frac{1}{2}-1\frac{1}{2}$	
597. 695	A	5	0.00	20. 65	$1\frac{1}{2}-\frac{1}{2}$	$3p^6 \ ^3P^o - 4s'' \ ^2S$	2847. 81	B	2	17. 07	21. 40	$1\frac{1}{2}-1\frac{1}{2}$	
602. 854	A	4	0.18	20. 65	$\frac{1}{2}-\frac{1}{2}$	(9)							
580. 261	A	8	0.00	21. 27	$1\frac{1}{2}-2\frac{1}{2}$	$3p^6 \ ^3P^o - 3d' \ ^3D$	2806. 16	B	5	19. 78	24. 18	$1\frac{1}{2}-2\frac{1}{2}$	$4p \ ^3P^o - 5s' \ ^3D$
583. 437	A	8	0.18	21. 34	$\frac{1}{2}-1\frac{1}{2}$	(10)	2764. 66	B	3	19. 72	24. 18	$\frac{1}{2}-1\frac{1}{2}$	
578. 605	A	4	0.00	21. 34	$1\frac{1}{2}-1\frac{1}{2}$		2534. 74	B	5	19. 78	24. 63	$1\frac{1}{2}-2\frac{1}{2}$	$4p \ ^3P^o - 4d' \ ^3D$
							2510. 63	B	0	19. 72	24. 63	$\frac{1}{2}-1\frac{1}{2}$	
							2544. 72	B	5	19. 78	24. 63	$1\frac{1}{2}-1\frac{1}{2}$	(18)

A III

IP 40.8 Anal C List D Feb. 1948

REFERENCES

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 B T. L. de Bruin, *Zeeman Verhandelingen*, p. 415 (Martinus Nijhoff, The Hague, 1935). W L, I, T
 J. C. Boyce, Phys. Rev. **49**, 351 (1936). T
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 B. Edlén, Phys. Rev. **62**, 434 (1942). T

A III

A III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
878. 728	A	12	0. 00	14. 05	2-2	$3p^4 \ ^3P - 3p^5 \ ^3P^o$	1669. 671	A	7	17. 89	25. 28	4-3	$3d \ ^3D^o - 4p \ ^3P^{\dagger}$
879. 622	A	8	0. 14	14. 17	1-1	(1)	1673. 425	A	7	17. 89	25. 26	3-2	
871. 099	A	10	0. 00	14. 17	2-1		1675. 637	A	4	17. 89	25. 25	2-1	
875. 534	A	9	0. 14	14. 24	1-0								
887. 404	A	10	0. 14	14. 05	1-2								
883. 179	A	9	0. 19	14. 17	0-1								
690. 170	A	8d	0. 00	17. 89	2-	$3p^4 \ ^3P - 3d \ ^3D^o$	1914. 398	A	9	19. 37	25. 82	3-2	$3d \ ^3D^o - 4p \ ^3P^{\dagger}$
695. 537	A	6	0. 14	17. 89	1-	(2)	1915. 564	A	7	19. 37	25. 82	2-1	(7)
637. 282	A	20	0. 00	19. 37	2-3	$3p^4 \ ^3P - 3d \ ^3D^o$	Air						
641. 808	A	12	0. 14	19. 37	1-2	(3)	2484. 11	B	6	23. 01	27. 98	4-4	$3d' \ ^3F^o - 4p' \ ^3F^{\dagger}$
643. 256	A	9	0. 19	19. 39	0-1		2508. 91	B	3	23. 04	27. 96	3-3	(8)
*637. 282	A	20	0. 00	19. 37	2-2		2533. 92	B	3	23. 07	27. 94	2-2	
641. 364	A	5	0. 14	19. 39	1-1								
636. 818	A	3	0. 00	19. 39	2-1								
553. 470	A	9	0. 00	22. 30	2-1	$3p^4 \ ^3P - 4s \ ^1S^o$	2724. 84	B	10	23. 30	27. 83	3-3	$3d' \ ^3D^o - 4p' \ ^3D^{\dagger}$
556. 893	A	6	0. 14	22. 30	1-1	(4)	2678. 38	B	9	23. 19	27. 79	2-2	(9)
558. 321	A	5	0. 19	22. 30	0-1		2631. 90	B	7	23. 11	27. 80	1-1	
							2345. 17	B	9	23. 30	28. 56	3-2	$3d' \ ^3D^o - 4p' \ ^3P^{\dagger}$
							2282. 21	B	7	23. 19	28. 59	2-1	
769. 152	A	12	1. 73	17. 78	2-1	$3p^4 \ ^1D - 3p^5 \ ^1P^o$	2242. 29	B	6	23. 11	28. 61	1-0	(10)
						(5)							

A IV

IP 59.6 Anal C List D Nov. 1947

REFERENCES

- A J. C. Boyce, Phys. Rev. **48**, 401 (1935). W L, I, T
 B T. L. de Bruin, *Physica* **3**, No. 8, 809 (1936). W L, I, T

A IV

A IV

I P 75 Anal C List B Oct. 1947

REFERENCE

A L. W. Phillips and W. L. Parker, Phys. Rev. **60**, 301 (1941). W L, I, T

AV

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POTASSIUM

K I

IP 4.32 Anal A List D May 1948

REFERENCES

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W L, T
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K I

IA	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air						
3217. 151	A	6R	0.00	3.84	$\frac{1}{2}-1\frac{1}{2}$	$4s^2S-7p^2P^o$ (1)
3217. 615	A	4R	0.00	3.84	$\frac{1}{2}-\frac{1}{2}$	
3101. 791	A	4R	0.00	3.98	$\frac{1}{2}-1\frac{1}{2}$	$4s^2S-8p^2P^o$ (2)
3102. 051	A	2R	0.00	3.98	$\frac{1}{2}-\frac{1}{2}$	
3034. 751	A	4R	{ 0.00	4.07	$\frac{1}{2}-1\frac{1}{2}$	$4s^2S-9p^2P^o$ (3)
3034. 911	A		{ 0.00	4.07	$\frac{1}{2}-\frac{1}{2}$	
2992. 108	A	2R	{ 0.00	4.12	$\frac{1}{2}-1\frac{1}{2}$	$4s^2S-10p^2P^o$ (4)
2992. 215	A		{ 0.00	4.12	$\frac{1}{2}-\frac{1}{2}$	
2963. 203	A	1R	{ 0.00	4.16	$\frac{1}{2}-1\frac{1}{2}$	$4s^2S-11p^2P^o$ (5)
2963. 277	A		{ 0.00	4.16	$\frac{1}{2}-\frac{1}{2}$	
2942. 661	A	1R	{ 0.00	4.19	$\frac{1}{2}-1\frac{1}{2}$	$4s^2S-12p^2P^o$ (6)
2942. 713	A		{ 0.00	4.19	$\frac{1}{2}-\frac{1}{2}$	

K II

IP 31.7 Anal C List B May 1948

REFERENCES

- A I. S. Bowen, Phys. Rev. 31, 497 (1928). W L, I, T
B T. L. de Bruin, Zeit. Phys. 38, 94 (1926). W L, I, T

CALCIUM

Ca I

IP 6.09 Anal A List B June 1948

REFERENCES

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 B H. Crew and G. V. McCawley, Astroph. J. **39**, 29 (1914). W L, I
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 (Julius Springer, Berlin, 1939). (I)

Ca I

Ca I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2734.82	C		0.00	4.51	0-1	4s ² 1S - 5p ¹ P ^o (1)	Air 2150.78	B	1	0.00	5.74	0-1	4s ² 1S - 8p ¹ P ^o (8)
2721.645	A	10	0.00	4.53	0-1	4s ² 1S - 4p' ¹ P ^o (2)	2770.79	C	3hv	1.89	6.34	2-3	4p ¹ P ^o - 4d' ¹ D (9)
2617.66	C	3	0.00	4.71	0-1	4s ² 1S - 4p' ¹ D ^o ? (3)	2764.60	C	2hv	1.88	6.34	1-2	
2541.40	C	0	0.00	4.86	0-1	4s ² 1S - 4p' ¹ P ^o (4)	2762.05	C	2	1.87	6.34	0-1	
2398.559	A	2	0.00	5.15	0-1	4s ² 1S - 5p ¹ P ^o (5)	2772.80	C	1	1.89	6.34	2-2	
2275.471	A	1	0.00	5.42	0-1	4s ² 1S - 6p ¹ P ^o (6)	2766.13	C	1	1.88	6.34	1-1	
2200.728	A	1	0.00	5.61	0-1	4s ² 1S - 7p ¹ P ^o (7)	2757.40	C	2h	1.89	6.37	2-1	4p ¹ P ^o - 4d' ¹ S (10)
							2749.34	C	1h	1.88	6.37	1-1	
							2745.49	C	1h	1.87	6.37	0-1	
							2564.09	C	3	1.89	6.70	2-2	4p ¹ P ^o - 4d' ¹ P (11)
							2558.20	C	2	1.88	6.70	1-1	
							2565.20	C	2	1.89	6.70	2-1	
							2558.60	C	2	1.88	6.70	1-0	
							2557.18	C	2	1.88	6.70	1-2	
							2554.82	C	2	1.87	6.70	0-1	

Ca II

IP 11.82 Anal A List B May 1948

REFERENCES

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Ca II

Ca II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1649. 96 1652. 02	A A	2 1	0.00 0.00	7.48 7.47	$\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4s^2S-5p^2P^o$ (1)	1434. 3 1433. 1	A A		1.69 1.69	10.30 10.30	$2\frac{1}{2}-$ $1\frac{1}{2}-2\frac{1}{2}$	$3d^2D-6f^2F^o$ (7)
1342. 07	A	1	0.00	9.20	$\frac{1}{2}-\frac{1}{2}$	$4s^2S-6p^2P^o$ (2)							
Air 2131. 43 2132. 25 2128. 733	A A B	2 1 0	1.69 1.69 1.69	7.48 7.47 7.48	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$3d^2D-5p^2P^o$ (3)	Air 2208. 606 2197. 791	A A	3 2	3.14 3.11	8.73 8.73	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4p^2P^o-6s^2S$ (8)
Vac 1840. 21 1838. 08	A A		1.69 1.69	8.40 8.40	$2\frac{1}{2}-$ $1\frac{1}{2}-2\frac{1}{2}$	$3d^2D-4f^2F^o$ (4)	2112. 763 2103. 239 2113. 19	A A A	2 2 1	3.14 3.11 3.14	8.98 8.98 8.98	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$4p^2P^o-5d^2D$ (9)
1644. 25	A	0	1.69	9.20		$3d^2D-6p^2P^o$ (5)	Vac 1851. 10 1843. 6	A A	2 1	3.14 3.11	9.81 9.81	$1\frac{1}{2}-\frac{1}{2}$ $\frac{1}{2}-\frac{1}{2}$	$4p^2P^o-7s^2S$ (10)
1555. 1 1553. 5	A A		1.69 1.69	9.63 9.63	$2\frac{1}{2}-$ $1\frac{1}{2}-2\frac{1}{2}$	$3d^2D-5f^2F^o$ (6)	1815. 04 1807. 74	A A	1 1	3.14 3.11	9.94 9.94	$1\frac{1}{2}-2\frac{1}{2}$ $\frac{1}{2}-1\frac{1}{2}$	$4p^2P^o-6d^2D$ (11)

Ca III

IP 51.00 Anal C List C May 1948

REFERENCES

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 B J. A. Anderson, See I. S. Bowen, Phys. Rev. 31, 497 (1928). W L, I

Ca III

Ca III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 490. 56	A	2	0.00	25.16	0-1	$3p^6^1S-3d^1[\frac{1}{2}]^o$ (1)	Air 2620. 82	B	6	30.11	34.82	1-0	$4s^1[\frac{1}{2}]^o-4p^1[\frac{1}{2}]$ (9)
409. 948	A	5	0.00	30.11	0-1	$3p^6^1S-4s^1[\frac{1}{2}]^o$ (2)	2541. 49 2634. 17	B	6	29.94	34.80	2-2	$4s^1[\frac{1}{2}]^o-4p^1[\frac{1}{2}]$ (10)
403. 734	A	5	0.00	30.58	0-1	$3p^6^1S-4s^1[\frac{1}{2}]^o$ (3)	2924. 33 2813. 88 2989. 30	B	8 7 6	30.58 30.32 30.58	34.80 34.71 34.71	1-2 0-1 1-1	$4s^1[\frac{1}{2}]^o-4p^1[\frac{1}{2}]$ (11)
1562. 50	A	6	26.34	34.24	3-2	$3d^1[\frac{3}{2}]^o-4p^1[\frac{2}{2}]$ (4)	2866. 57 2704. 87	B	7 6	30.58 30.32	34.88 34.88	1-1 0-1	$4s^1[\frac{1}{2}]^o-4p^1[\frac{1}{2}]$ (12)
1870. 28	A	6	28.20	34.80	3-2	$3d^1[\frac{5}{2}]^o-4p^1[\frac{1}{2}]$ (5)	Vac 1943. 12	A	6	33.60	39.95	1-2	$4p^1[\frac{1}{2}]^o-4d^1[\frac{1}{2}]^o$ (13)
1854. 72	A	6	27.88	34.53	2-2	$3d^1[\frac{5}{2}]^o-4p^1[\frac{1}{2}]$ (6)	Air 2152. 47	A	6	34.53	40.27	2-3	$4p^1[\frac{1}{2}]^o-4d^1[\frac{3}{2}]^o$ (14)
Air 2899. 78 2988. 61 2869. 95	B B B	9 7 7	29.94 30.11 29.94	34.20 34.24 34.24	2-3 1-2 2-2	$4s^1[\frac{1}{2}]^o-4p^1[\frac{2}{2}]$ (7)	2129. 20	A	6	34.71	40.50	1-2	$4p^1[\frac{1}{2}]^o-4d^1[\frac{2}{2}]^o$ (15)
2687. 78 2881. 80 2791. 63	B B B	8 7 6	29.94 30.11 30.11	34.53 34.40 34.53	2-2 1-1 1-2	$4s^1[\frac{1}{2}]^o-4p^1[\frac{1}{2}]$ (8)	2140. 39	A	6	34.80	40.56	2-1	$4p^1[\frac{1}{2}]^o-5s^1[\frac{1}{2}]^o$ (16)

SCANDIUM

Sc I

I P 6.53 Anal A List A Nov. 1948

REFERENCE

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Sc I

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Air 2711.36 2706.78	A A	2 2	0.02 0.00	4.57 4.56	2½-2½ 1½-1½	$a^3D - w^3D^o$ (1)
2707.95 2692.78	A A	1 1	0.02 0.00	4.58 4.58	2½-1½ 1½-½	$a^3D - w^3P^o$ (2)

Sc II

I P 12.8 Anal A List C June 1948

REFERENCES

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Sc II

Sc II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2552.38 2560.26 2563.23 2545.24 2555.84	A A A A A	10e 9e 8e 5e 6e	0.02 0.01 0.00 0.01 0.00	4.86 4.83 4.81 4.86 4.83	3-2 2-1 1-0 2-2 1-1	$a^3D - y^3P^o \dagger$ (1)	Air 2611.23 2801.35 2789.20 2782.34	A A A A	3e 6e 5e 3e	3.22 3.44 3.41 3.39	7.95 7.84 7.83 7.82	2-2 4-4 3-3 2-2	$z^1D^o - f^1D$ (3) $z^3F^o - e^3F \dagger$ (4) $z^3D^o - e^3F \dagger$ (5)
2273.10	B	3	1.45	6.88	0-1	$a^1S - y^1P^o$ (2)	2826.69 2822.17 2819.56	A A A	10e 7e 5e	3.48 3.46 3.45	7.84 7.83 7.82	3-4 2-3 1-2	

Sc III

IP 24.65 Anal C List A Nov. 1948

REFERENCES

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 B R. C. Gibbs and H. E. White, Proc. Nat. Acad. Sci. **12**, 598 (1926). W L, (I), T
 C H. N. Russell and R. J. Lang, Mt. Wilson Contr. No. 337; Astroph. J. **66**, 19 (1927). W L, (I), T

Sc III

IA	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 1603. 12	A	10	0. 02	7. 72	$2\frac{1}{2}-1\frac{1}{2}$	$3d^1D-4p^1P^o$ (1)
1610. 25	A	8	0. 00	7. 67	$1\frac{1}{2}-\frac{1}{2}$	
1598. 06	A	5	0. 00	7. 72	$1\frac{1}{2}-1\frac{1}{2}$	
731. 66	A	1	0. 02	16. 90	$2\frac{1}{2}-3\frac{1}{2}$	$3d^1D-4f^1F^o$ (2)
730. 60	A	0	0. 00	16. 90	$1\frac{1}{2}-2\frac{1}{2}$	

Air 2699. 01	B	(3)	3. 15	7. 72	$\frac{1}{2}-1\frac{1}{2}$	$4s^2S-4p^1P^o$ (3)
2734. 02	B	(2)	3. 15	7. 67	$\frac{1}{2}-\frac{1}{2}$	

2010. 48	A	6	7. 72	13. 86	$1\frac{1}{2}-2\frac{1}{2}$	$4p^1P^o-4d^1D$ (4)
Vac 1993. 98	A	4	7. 67	13. 86	$\frac{1}{2}-1\frac{1}{2}$	
Air 2012. 30	A	1	7. 72	13. 86	$1\frac{1}{2}-1\frac{1}{2}$	

Vac 1912. 48	C	(2)	7. 72	14. 18	$1\frac{1}{2}-\frac{1}{2}$	$4p^1P^o-5s^2S$ (5)
1895. 33	C	(2)	7. 67	14. 18	$\frac{1}{2}-\frac{1}{2}$	

Sc IV

IP 73.6 Anal E List A Nov. 1948

REFERENCES

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 P. G. Kruger, S. G. Weissberg and L. W. Phillips, Phys. Rev. **51**, 1090 (1937). T

Sc IV

IA	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac 298. 428	A	8	0. 00	4. 14	0-1	$3p^6^1S-4s^1[1\frac{1}{2}]^o$ (1)
293. 248	A	8	0. 00	4. 21	0-1	$3p^6^1S-4s' [\frac{1}{2}]^o$ (2)
217. 189	A	0	0. 00	5. 68	0-1	$3p^6^1S-5s^1[1\frac{1}{2}]^o$ (3)
215. 522	A	2	0. 00	5. 73	0-1	$3p^6^1S-5s' [\frac{1}{2}]^o$ (4)

TITANIUM

Ti I

IP 6.81 Anal A List B Sept. 1948

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 H H. N. Russell, Mt. Wilson Contr. No. 345; Astroph. J. 68, 347 (1927). W L, (I), T
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 P Predicted wavelength. W L

Ti I

Ti I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2958. 133	A	70R	0.05	4.22	4-4	$a^3F - v^3F^o$ (1)	2541. 917	G	20	0.05	4.90	4-3	$a^3F - s^3D^o$ (8)
2948. 255	A	60r	0.02	4.21	3-3		2529. 866	L	(4)	0.02	4.90	3-2	
*2941. 995§	A	60r	0.00	4.19	2-2		2520. 543	G	10	0.00	4.90	2-1	
2967. 220	F	25	0.05	4.21	4-3		2527. 991	G	5	0.02	4.90	3-3	
2956. 796	F	25	0.02	4.19	3-2		2519. 01	K	(4)	0.00	4.90	2-2	
2937. 301	F	25	0.02	4.22	3-4		2517. 14	H	(1)	0.00	4.90	2-3	
2933. 526	F	25	0.00	4.21	2-3		2470. 98	H	(3)	0.05	5.04	4-3	$a^3F - r^3D^o$ (9)
2679. 949	G	20	0.05	4.65	4-5	$a^3F - v^3G^o$ (2)	2468. 360	G	2	0.02	5.02	3-2	
2669. 610	G	15	0.02	4.64	3-4		2464. 966	G	2	0.00	5.01	2-1	
2661. 966	L	10	0.00	4.64	2-3		2457. 80	H	(2)	0.02	5.04	3-3	
2685. 14	H	(3)	0.05	4.64	4-4		2458. 00	H	(2)	0.00	5.02	2-2	
2669. 274	G	2	0.02	4.64	3-3	$a^3F - x^1F^o$ (3)	2440. 98	G	10	0.05	5.10	4-5	$a^3F - u^3G^o$ (10)
2657. 186	G	10	0.00	4.64	2-3		2433. 23	G	6	0.02	5.09	3-4	
2668. 36	H	(1)	0.05	4.67	4-4	$a^3F - u^3F^o$ (4)	2428. 24	G	2	0.00	5.08	2-3	
2660. 66	H	(1)	0.02	4.66	3-3		2446. 12	H	(2)	0.05	5.09	4-4	
2654. 928	G	5	0.00	4.65	2-2		2438. 28	H	(2)	0.02	5.08	3-3	$a^3F - s^3F^o$ (11)
2676. 09	H	(1)	0.05	4.66	4-3		2424. 26	G	10	0.05	5.14	4-4	
2653. 02	H	(2)	0.02	4.67	3-4		2421. 31	G	10	0.02	5.12	3-3	
2648. 65	H	(1)	0.00	4.66	2-3		2418. 37	G	10	0.00	5.10	2-2	
2646. 650	G	40	0.05	4.71	4-3	$a^3F - u^3D^o$ (5)	2434. 09	G	3	0.05	5.12	4-3	
2644. 275	G	40	0.02	4.69	3-2		2428. 36	K	(2)	0.02	5.10	3-2	
2641. 116	G	40	0.00	4.67	2-1		2411. 58	K	(3)	0.02	5.14	3-4	$a^3F - q^3D^o$ (12)
2631. 55	J	(1)	0.02	4.71	3-3		2411. 37	G	2	0.00	5.12	2-3	
2632. 424	G	15	0.00	4.69	2-2		2384. 52	G	4	0.05	5.22	4-3	
2611. 287	G	25	0.05	4.77	4-4	$a^3F - t^3F^o$ (6)	2378. 15	G	3	0.02	5.21	3-2	$a^3F - p^3D^o$ (13)
2605. 163	G	25	0.02	4.76	3-3		2371. 95	K	(2)	0.00	5.20	2-1	
2599. 910	G	25	0.00	4.75	2-2		2372. 23	K	(1)	0.02	5.22	3-3	
2619. 942	G	10	0.05	4.76	4-3		*2368. 57	K	(2)	0.00	5.21	2-2	
2611. 468	G	8	0.02	4.75	3-2		2380. 80	K	(4)	0.05	5.23	4-3	
2596. 596	G	10	0.02	4.77	3-4		2374. 59	K	(3)	0.02	5.22	3-2	
2593. 647	L	(3)	0.00	4.76	2-3		2369. 29	K	(2)	0.00	5.21	2-1	
2604. 88	H	(3)	0.05	4.79	4-3	$a^3F - t^3D^o$ (7)	2305. 69	G	12	0.05	5.40	4-4	$a^3F - r^3F^o$ (14)
2594. 63	H	(2)	0.02	4.78	3-2		2302. 75	G	10	0.02	5.38	3-3	
2586. 26	H	(3)	0.00	4.77	2-1		2299. 86	G	10	0.00	5.37	2-2	
2590. 265	G	5	0.02	4.79	3-3		2314. 27	K	(2)	0.05	5.38	4-3	
2583. 224	G	2	0.00	4.78	2-2		2308. 88	K	(2)	0.02	5.37	3-2	
2578. 91	H	(2)	0.00	4.79	2-3		2294. 24	G	3	0.02	5.40	3-4	
							2293. 78	G	3	0.00	5.38	2-3	

Ti I—Continued

Ti I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2280.00	G	12	0.05	5.46	4-3	<i>a</i> $^3F - o$ $^3D^\circ$ (15)	2742.30	J	15	0.90	5.40	2-2	<i>a</i> $^1D - v$ $^1D^\circ$ (25)
2276.75	G	10	0.02	5.44	3-2		2735.613	G	6	0.90	5.41	2-2	<i>a</i> $^1D - u$ $^1D^\circ$ (26)
2273.33	G	8	0.00	5.43	2-1								
2268.78	K	(4)	0.02	5.46	3-3								
2267.98	K	(4)	0.00	5.44	2-2								
2260.08	K	(1)	0.00	5.46	2-3								
2272.65	G	8	0.05	5.48	4-5	<i>a</i> $^3F - t$ $^3G^\circ$ (16)	2965.72	G	15	1.06	5.22	2-3	<i>a</i> $^3P - q$ $^3D^\circ$ (27)
2272.45	K	(1)	0.02	5.45	3-4		2965.231	L	(5)	1.05	5.21	1-2	
*2238.73	K	(8)	0.05	5.56	4-4		2965.681	F	8	1.04	5.20	0-1	
2233.79	K	(8)	0.02	5.55	3-3		2974.926	F	4	1.06	5.21	2-2	
2230.18	K	(7)	0.00	5.53	2-2		2970.552	F	4	1.05	5.20	1-1	
2244.69	K	(7)	0.05	5.55	4-3?		2980.28	G	tr	1.06	5.20	2-1	
*2238.73	K	(8)	0.02	5.53	3-2		2959.98	G	5	1.06	5.23	2-3	<i>a</i> $^3P - p$ $^3D^\circ$ (28)
2227.91	K	(1)	0.02	5.56	3-4		2959.71	G	3	1.05	5.22	1-2	
2230.48	K	(7)	0.05	5.58	4-3	<i>a</i> $^3F - n$ $^3D^\circ$ (18)	2969.37	GG	1	1.06	5.22	2-2	
2226.77	K	(6)	0.02	5.56	3-2		2966.38	G	1	1.05	5.21	1-1	
2223.19	K	(7)	0.00	5.55	2-1		2805.680	F	6	1.06	5.46	2-3	<i>a</i> $^3P - o$ $^3D^\circ$ (29)
2219.75	K	(5)	0.02	5.58	3-3		2809.150	F	5	1.05	5.44	1-2	
2218.38	K	(5)	0.00	5.56	2-2		2812.963	F	2	1.04	5.43	0-1	
2211.36	K	(1)	0.00	5.58	2-3		*2817.83§	K	2	1.06	5.44	2-2	
							2817.37	K	(3)	1.05	5.43	1-1	
2836.09	G	1	0.84	5.20	5-4	<i>a</i> $^3F - v$ $^3D^\circ$ (19)	2757.397	L	6	1.06	5.54	2-1	<i>a</i> $^3P - w$ $^3S^\circ$ (30)
*2836.60§	G	1	0.83	5.18	4-3		2749.062	L	5	1.05	5.54	1-1	
2836.40	G	1n	0.82	5.17	3-2		2744.846	G	5	1.04	5.54	0-1	
2835.63	G	2	0.81	5.17	2-1		2731.145	G	4	1.06	5.58	2-3	<i>a</i> $^3P - n$ $^3D^\circ$ (31)
2834.75	G	2	0.81	5.16	1-0		m2733.56	P	Fe II	1.05	5.56	1-2	
*2828.05	G	2	0.83	5.20	4-4		2736.71	H	(2)	1.04	5.55	0-1	
2830.03	G	2n	0.82	5.18	3-3		2741.82	H	(1)	1.06	5.56	2-2	
2831.40	G	1n	0.81	5.17	2-2		2740.88	H	(2)	1.05	5.55	1-1	
2832.26	G	1n	0.81	5.17	1-1		2733.265	G	30	1.06	5.58	2-2	<i>a</i> $^3P - t$ 3Po (32)
2821.51	G	1	0.82	5.20	3-4		2731.592	G	7	1.05	5.57	1-1	
2825.06	G	1	0.81	5.18	2-3		2739.804	G	15	1.06	5.57	2-1	
*2828.05	G	2	0.81	5.17	1-2		2735.298	G	10	1.05	5.56	1-0	
							2725.084	G	10	1.05	5.58	1-2	
2976.32	G	2	0.90	5.04	2-3	<i>a</i> $^1D - r$ $^3D^\circ$ (20)	2727.416	L	8	1.04	5.57	0-1	
2991.79	G	1	0.90	5.02	2-2								
2947.72	G	3	0.90	5.08	2-3		2990.48	G	3	1.45	5.58	4-3	<i>b</i> $^3F - n$ $^3D^\circ$ (33)
2922.92	G	2	0.90	5.12	2-3		2990.98	G	3	1.44	5.56	3-2	
							2990.03	G	3	1.42	5.55	2-1	
2912.072	F	40	0.90	5.13	2-3	<i>a</i> $^1D - v$ $^1F^\circ$ (23)	2928.320	F	30	1.50	5.71	4-4	<i>a</i> $^1G - u$ $^1G^\circ$ (34)
2802.465	F	15	0.90	5.30	2-1		2758.061	G	20	1.50	5.97	4-3	<i>a</i> $^1G - u$ $^1F^\circ$ (35)

Strongest Unclassified Lines of Ti I

2905.649	F	5	IVA				2246.14	G	4				
2892.77	H	[3]	[IVA]				2238.20	K	(6)				
2688.820	G	10					2229.67	K	(7)				
2684.812	G	5					2225.11	K	(8)				
2656.920	G	4					2143.52	K	(6)				
2656.376	G	4					2142.05	K	(5)				
2649.597	G	3					2139.41	K	(5)				
2649.306	G	4					2126.89	K	(5)				
2580.809	G	5					2123.50	K	(7)				
2504.522	G	3					2121.90	K	(6)				
2264.07	G	5					2117.01	K	(6)				

Ti II

IP 13.6 Anal A List B Sept. 1948

REFERENCES

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 E H. N. Russell, *Mt. Wilson Contr. No. 344; Astroph. J.* **66**, 283 (1927). W L, (I), T
 F F. Exner and E. Haschek, See H. Kayser, *Handbuch der Spectroscopie* **6**, 655 (1912). W L, (I)
 G A. S. King, *Mt. Wilson Contr. No. 274; Astroph. J.* **59**, 155 (1924). W L
 H R. J. Lang, unpublished material. W L, (I)
 I C. E. Moore, unpublished material. W L, I
 J K. Behner, *Zeit. Wiss. Ptg.* **23**, 325 (1925). W L
 P Predicted wavelength. W L

Ti II

Ti II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2909. 912	D	7	0.05	4.29	4½-4½	a 4F -z 2G°†	2498. 94	F	(2)	0.60	5.54	3½-2½	a 3F -x 2D° (10)
2913. 08	I	1	0.03	4.26	3½-3½	(1)	2481. 49	F	(1)	0.57	5.54	2½-1½	
2474. 22	F	(2)	0.05	5.04	4½-3½	a 4F -y 4D°†	2054. 54	E	(3)	0.60	6.61	3½-2½	a 3F -w 2D° (11)
2477. 21	F	(2)	0.03	5.01	3½-2½	(2)	2041. 49	E	(3)	0.57	6.62	2½-1½	
2478. 64	F	(5)	0.01	4.99	2½-1½		2043. 26	E	tr	0.57	6.61	2½-2½	
Vac													
1914. 32	P		0.05	6.50	4½-3½	a 4F -z 4D°	2764. 821	J	10	1.08	5.54	2½-2½	a 3D -z 2D° (12)
1914. 11	H	(00)	0.03	6.48	3½-2½	(3)	2761. 291	J	7	1.08	5.54	1½-1½	
1909. 74	H	(2)	0.01	6.48	2½-1½		2762. 22	F	2	1.08	5.54	1½-2½	
1911. 01	H	(0)	0.00	6.46	1½-½								
1908. 29	H	(3)	0.03	6.50	3½-3½		2716. 20	F	4	1.08	5.62	2½-1½	a 3D -y 3P° (13)
1909. 33	H	(2)	0.01	6.48	2½-2½		2719. 39	F	2	1.08	5.61	1½-½	
1906. 30	H	(3)	0.00	6.48	1½-1½		2713. 76	F	(1)	1.08	5.62	1½-1½	
Air													
2525. 619	J	30	0.15	5.04	4½-3½	b 4F -y 4D°	2884. 099	D	70	1.13	5.40	4½-4½	a 3G -y 3G° (14)
2531. 286	J	20	0.13	5.01	3½-2½	(4)	2877. 418	D	60	1.11	5.40	3½-3½	
2534. 640	J	20	0.12	4.99	2½-1½		2887. 456	D	2	1.13	5.40	4½-3½	
2535. 881	J	10	0.11	4.98	1½-½		2874. 08	E	2	1.11	5.40	3½-4½	
2517. 448	J	2	0.13	5.04	3½-3½								
2524. 655	J	8	0.12	5.01	2½-2½		2717. 304	J	3	1.13	5.67	4½-5½	a 3G -z 3H° (15)
2529. 74	P		0.11	4.99	1½-1½		2725. 79	F	3	1.11	5.64	3½-4½	
2510. 90	F	2	0.12	5.04	2½-3½								
2519. 79	F	0	0.11	5.01	1½-2½								
2891. 050	D	15	0.60	4.87	3½-2½	a 2F -y 2D°	2862. 34	F	30	1.23	5.54	1½-2½	a 3P -x 2D° (16)
2888. 923	D	15	0.57	4.84	2½-1½	(5)	2851. 087	D	20	1.22	5.54	½-1½	
2868. 732	D	15	0.7	4.87	2½-2½		2861. 291	D	3	1.23	5.54	1½-1½	
2858. 399	D	8	0.57	4.89	2½-1½	a 2F -z 2P°	2806. 407	D	5	1.22	5.61	½-½	a 3P -y 3P° (17)
2841. 914	D	30	0.60	4.95	3½-3½	a 2F -y 2F°							
2832. 158	D	20	0.57	4.93	2½-2½	(7)							
2853. 922	D	10	0.60	4.93	3½-2½								
2820. 36	E	4	0.57	4.95	2½-3½								
2784. 648	J	3	0.60	5.04	3½-3½	a 2F -y 4D°	2346. 35	F	(1)	1.24	6.50	2½-3½	b 4P -x 4D° (18)
2780. 55	F	5n	0.57	5.01	2½-2½	(8)	2349. 97	F	(3)	1.23	6.48	1½-2½	
2763. 90	F	(1)	0.57	5.04	2½-3½		2347. 46	F	(2)	1.22	6.48	½-1½	
2571. 036	J	20	0.60	5.40	3½-4½	a 2F -y 2G°	2355. 17	F	(2)	1.24	6.48	2½-2½	
2555. 988	J	10	0.57	5.40	2½-3½	(9)	2350. 67	F	(2)	1.23	6.48	1½-1½	
2573. 72	F	0	0.60	5.40	3½-3½		2354. 61	F	(1)	1.22	6.46	½-½	
							2355. 86	F	(1)	1.24	6.48	2½-1½	
							2357. 82	F	(2)	1.23	6.46	1½-½	

Ti II—Continued

Ti II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air													
2159. 09	E	(5)	1. 24	6. 95	$2\frac{1}{2}-2\frac{1}{2}$	b $^4P - y \ ^4P^o$	2945. 47	F	50	3. 86	8. 05	$4\frac{1}{2}-5\frac{1}{2}$	$z \ ^4F^o - e \ ^4G$
2158. 29	E	(2)	1. 23	6. 94	$1\frac{1}{2}-1\frac{1}{2}$	(19)	*2941. 993	D	50	3. 84	8. 04	$3\frac{1}{2}-4\frac{1}{2}$	(26)
2156. 80	E	(1)	1. 22	6. 94	$\frac{1}{2}-\frac{1}{2}$		2938. 69	F	30	3. 82	8. 02	$2\frac{1}{2}-3\frac{1}{2}$	
2162. 68	E	(4)	1. 24	6. 94	$2\frac{1}{2}-1\frac{1}{2}$		2936. 17	F	30	3. 81	8. 01	$1\frac{1}{2}-2\frac{1}{2}$	
2159. 50	E	(3)	1. 23	6. 94	$1\frac{1}{2}-\frac{1}{2}$		2958. 30	P	2	3. 86	8. 04	$4\frac{1}{2}-4\frac{1}{2}$	
2154. 70	E	(4)	1. 23	6. 95	$1\frac{1}{2}-2\frac{1}{2}$		2952. 10	F	4	3. 84	8. 02	$3\frac{1}{2}-3\frac{1}{2}$	
2155. 58	E	(4)	1. 22	6. 94	$\frac{1}{2}-1\frac{1}{2}$		2926. 75	F	10	3. 86	8. 08	$4\frac{1}{2}-3\frac{1}{2}$	$z \ ^4F^o - f \ ^2F$
							2910. 76	F	0n	3. 84	8. 08	$3\frac{1}{2}-3\frac{1}{2}$	(27)
2880. 28	E	3	1. 57	5. 86	$2\frac{1}{2}-3\frac{1}{2}$	b $^2D - x \ ^2F^o$	2800. 65	F	30	3. 86	8. 27	$4\frac{1}{2}-3\frac{1}{2}$	$z \ ^4F^o - e \ ^4D$
2856. 616	J	2	1. 56	5. 88	$1\frac{1}{2}-2\frac{1}{2}$	(20)	2790. 62	F	3n	3. 84	8. 26	$3\frac{1}{2}-2\frac{1}{2}$	(28)
2450. 44	E	(6)	1. 57	6. 61	$2\frac{1}{2}-2\frac{1}{2}$	b $^2D - w \ ^2D^o$	2788. 00	F	8	3. 82	8. 25	$2\frac{1}{2}-1\frac{1}{2}$	
2440. 21	F	(5)	1. 56	6. 62	$1\frac{1}{2}-1\frac{1}{2}$	(21)	2782. 30	F	2n	3. 81	8. 24	$1\frac{1}{2}-\frac{1}{2}$	
2447. 92	F	(2)	1. 57	6. 62	$2\frac{1}{2}-1\frac{1}{2}$		2785. 99	F	6n	3. 84	8. 27	$3\frac{1}{2}-3\frac{1}{2}$	
2442. 67	F	(2)	1. 56	6. 61	$1\frac{1}{2}-2\frac{1}{2}$		*2778. 48	F	2n*	(3. 82	8. 26	$2\frac{1}{2}-2\frac{1}{2}$	
							2646. 08	F	50n	3. 86	8. 53	$4\frac{1}{2}-4\frac{1}{2}$	$z \ ^4F^o - f \ ^2F$
2261. 23	F	(3)	1. 88	7. 34	$4\frac{1}{2}-3\frac{1}{2}$	b $^2G - w \ ^2F^o$	2642. 15	F	20n	3. 84	8. 51	$3\frac{1}{2}-3\frac{1}{2}$	(29)
2269. 14	F	(3)	1. 88	7. 32	$3\frac{1}{2}-2\frac{1}{2}$	(22)	2638. 70	F	10n	3. 82	8. 50	$2\frac{1}{2}-2\frac{1}{2}$	
2261. 64	F	(1)	1. 88	7. 34	$3\frac{1}{2}-3\frac{1}{2}$		2635. 60	F	5n	3. 81	8. 49	$1\frac{1}{2}-1\frac{1}{2}$	
							2943. 12	F	12n	3. 89	8. 08	$3\frac{1}{2}-3\frac{1}{2}$	$z \ ^2F^o - f \ ^2F$
2738. 70	P	3n	2. 05	6. 56	$1\frac{1}{2}-1\frac{1}{2}$	b $^2P - x \ ^2P^o$	2931. 27	F	40	3. 85	8. 06	$2\frac{1}{2}-2\frac{1}{2}$	(30)
*2730. 95	F	6n?	2. 04	6. 56	$\frac{1}{2}-\frac{1}{2}$	(23)	2918. 77	F	2n	3. 85	8. 08	$2\frac{1}{2}-3\frac{1}{2}$	
							2751. 70	F	5n..	3. 89	8. 37	$3\frac{1}{2}-4\frac{1}{2}$	$z \ ^2F^o - e \ ^4G$
							2746. 70	F	30n	3. 85	8. 35	$2\frac{1}{2}-3\frac{1}{2}$	(31)
							2768. 20	F	tr	3. 89	8. 35	$3\frac{1}{2}-3\frac{1}{2}$	
2856. 24	F	25	3. 73	8. 05	$5\frac{1}{2}-5\frac{1}{2}$	$z \ ^4G^o - e \ ^4G$							
2846. 09	F	15	3. 70	8. 04	$4\frac{1}{2}-4\frac{1}{2}$	(24)							
*2836. 60§	G	15	3. 67	8. 02	$3\frac{1}{2}-3\frac{1}{2}$								
2828. 80	P	30n*	3. 65	8. 01	$2\frac{1}{2}-2\frac{1}{2}$		2990. 17	F	10	3. 95	8. 08	$2\frac{1}{2}-3\frac{1}{2}$	$z \ ^2D^o - f \ ^2F$
2868. 30	P	0n	3. 73	8. 04	$5\frac{1}{2}-4\frac{1}{2}$		2979. 20	F	10	3. 92	8. 06	$1\frac{1}{2}-2\frac{1}{2}$	(32)
2855. 49	F	1n	3. 70	8. 02	$4\frac{1}{2}-3\frac{1}{2}$								
2844. 09	F	2n	3. 67	8. 01	$3\frac{1}{2}-2\frac{1}{2}$								
2834. 14	F	10	3. 70	8. 05	$4\frac{1}{2}-5\frac{1}{2}$								
2827. 22	F	10	3. 67	8. 04	$3\frac{1}{2}-4\frac{1}{2}$		2752. 85	F	4n	4. 05	8. 53	$3\frac{1}{2}-4\frac{1}{2}$	$z \ ^4D^o - f \ ^4F$
2821. 41	F	8	3. 65	8. 02	$2\frac{1}{2}-3\frac{1}{2}$		2757. 62	E	3n	4. 04	8. 51	$2\frac{1}{2}-3\frac{1}{2}$	(33)
							2758. 35	F	2n	4. 02	8. 50	$1\frac{1}{2}-2\frac{1}{2}$	
2828. 150	D	60	3. 73	8. 10	$5\frac{1}{2}-6\frac{1}{2}$	$z \ ^4G^o - e \ ^4H$	2758. 93	P	1n	4. 02	8. 49	$\frac{1}{2}-1\frac{1}{2}$	
*2817. 838§	D	60	3. 70	8. 08	$4\frac{1}{2}-5\frac{1}{2}$	(25)	2762. 92	E	(0n)	4. 05	8. 51	$3\frac{1}{2}-3\frac{1}{2}$	
2810. 276	D	50	3. 67	8. 06	$3\frac{1}{2}-4\frac{1}{2}$		2765. 65	F	0n	4. 04	8. 50	$2\frac{1}{2}-2\frac{1}{2}$	
2805. 00	F	40	3. 65	8. 05	$2\frac{1}{2}-3\frac{1}{2}$		2764. 28	P	(1)	4. 02	8. 49	$1\frac{1}{2}-1\frac{1}{2}$	
2839. 70	E	15	3. 73	8. 08	$5\frac{1}{2}-5\frac{1}{2}$								
2828. 87	P	30n*	3. 70	8. 06	$4\frac{1}{2}-4\frac{1}{2}$								
2819. 99	F	8	3. 67	8. 05	$3\frac{1}{2}-3\frac{1}{2}$		2954. 76	F	60	4. 29	8. 47	$4\frac{1}{2}-5\frac{1}{2}$	$z \ ^2G^o - e \ ^2H$
							2958. 98	P	50	4. 26	8. 44	$3\frac{1}{2}-4\frac{1}{2}$	(34)

Strongest Unclassified Lines of Ti II

Ti III

I P 28.02 Anal C List C Sept. 1948

REFERENCE

A H. N. Russell and R. J. Lang, Mt. Wilson Contr. No. 337; Astroph. J. 66, 13 (1927). W L, I, T

Ti III

Ti III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Air						
*1298.67	A	50	0.05	9.56	4-3	$a ^3F - z ^3D^o$ (1)	2563.42	A	15	4.74	9.56	3-3	$a ^3D - z ^3D^o \dagger$ (6)
1298.95	A	40	0.02	9.53	3-2		2565.42	A	8	4.72	9.53	2-2	
*1298.67	A	50	0.00	9.51	2-1		2567.53	A	8	4.70	9.51	1-1	
*1294.67	A	50	0.02	9.56	3-3		2580.43	A	5	4.74	9.53	3-2	
1295.91	A	30	0.00	9.53	2-2		2576.43	A	5	4.72	9.51	2-1	
1286.38	A	40	0.05	9.65	4-4	$a ^3F - z ^3F^o$ (2)	2516.01	A	20	4.74	9.65	3-4	$a ^3D - z ^3F^o \dagger$ (7)
1289.32	A	30	0.02	9.60	3-3		2527.80	A	15	4.72	9.60	2-3	
1291.64	A	20	0.00	9.56	2-2		2540.02	A	15	4.70	9.56	1-2	
1293.26	A	30	0.05	9.60	4-3								
*1294.67	A	50	0.02	9.56	3-2								
1282.49	A	3	0.02	9.65	3-4								
							2984.76	A	10	5.15	9.28	2-2	$b ^1D - z ^1D^o$ (8)
1498.65	A	30	1.05	9.28	2-2	$a ^1D - z ^1D^o$ (3)	2413.97	A	15	5.15	10.26	2-3	$b ^1D - z ^1F^o$ (9)
1327.60	A	15	1.05	10.34	2-1	$a ^1D - z ^1P^o$ (4)	2375.02	A	6	5.15	10.34	2-1	$b ^1D - z ^1P^o$ (10)
1455.22	A	40	1.78	10.26	4-3	$a ^1G - z ^1F^o$ (5)							

Ti IV

I P 43.06 Anal C List D Sept. 1948

REFERENCE

A H. N. Russell and R. J. Lang, Mt. Wilson Contr. No. 337; Astroph. J. 66, 18 (1927). W L, I, T

Ti IV

I A	Ref	Int	E P		J	Multiplet (No)
			Low	High		
Vac						
779.14	A	20	0.05	15.89	$2\frac{1}{2} - 1\frac{1}{2}$	$3d ^2D - 4p ^2P^o$ (1)
781.78	A	20	0.00	15.79	$1\frac{1}{2} - \frac{1}{2}$	
776.82	A	10	0.00	15.89	$1\frac{1}{2} - 1\frac{1}{2}$	
Air						
2067.50	A	15	9.92	15.89	$\frac{1}{2} - 1\frac{1}{2}$	$4s ^2S - 4p ^2P^o$ (2)
2103.08	A	10	9.92	15.79	$\frac{1}{2} - \frac{1}{2}$	
Vac						
1467.25	A	30	15.89	24.30	$1\frac{1}{2} - 2\frac{1}{2}$	$4p ^2P^o - 4d ^2D$ (3)
1451.75	A	30	15.79	24.29	$\frac{1}{2} - 1\frac{1}{2}$	
1469.21	A	15	15.89	24.29	$1\frac{1}{2} - 1\frac{1}{2}$	
Air						
2546.85	A	12	24.30	29.15	$2\frac{1}{2} - 3\frac{1}{2}$	$4d ^2D - 4f ^2F^o \dagger$ (4)
2541.75	A	8	24.29	29.15	$1\frac{1}{2} - 2\frac{1}{2}$	

VANADIUM

VI

IP 6.71 Anal A List B Sept. 1948

REFERENCES

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W L, I, T
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- G F. Exner and E. Haschek, see H. Kayser, *Handbuch der Spectroscopie* **6**, 750 (1912). W L
- H C. E. Moore, Phys. Rev. **55**, 710 (1939) and Ref. A. W L, (I), T

VI

VI

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2977. 550	D	25r	0. 07	1. 35	4½ - 3½	a 4F - w 4D°†	2870. 575	D	35r	0. 07	4. 37	4½ - 3½	a 4F - u 4D°
2962. 784	D	30r	0. 04	1. 30	3½ - 2½	(1)	2864. 386	D	30r	0. 04	4. 35	3½ - 2½	(6)
2954. 33	G	20	0. 02	0. 80	2½ - 1½		2859. 997	D	25	0. 02	4. 33	2½ - 1½	
2943. 197	D	30r	0. 00	0. 09	1½ - ½		2855. 252	D	20	0. 00	4. 32	1½ - ½	
2957. 30	G	10?	0. 04	1. 35	3½ - 3½		2851. 784	D	20	0. 04	4. 37	3½ - 3½	
2946. 54	G	15	0. 02	1. 30	2½ - 2½		2849. 197	H	15	0. 02	4. 35	2½ - 2½	
2942. 354	D	10	0. 00	0. 80	1½ - 1½		2848. 807	D	15	0. 00	4. 33	1½ - 1½	
2938. 67	G	6	0. 00	4. 20	1½ -	a 4F - 1°	2836. 714	D	3	0. 02	4. 37	2½ - 3½	
						(2)	2838. 06	G	5	0. 00	4. 35	1½ - 2½	
2942. 33	G	10	0. 07	4. 26	4½ - 4½	a 4F - v 4F°	*2778. 058	H	4	0. 07	4. 51	4½ - 4½?	a 4F - x 2G°
2935. 880	D	15	0. 04	4. 24	3½ - 3½	(3)							(7)
*2937. 696	D	15	(0. 02	4. 22	2½ - 2½		*2747. 534§	A	(6)	0. 07	4. 56	4½ - 5½	a 4F - w 4G°
			{0. 00	4. 20	1½ - 1½		2733. 334	A	(8)	0. 04	4. 56	3½ - 4½	(8)
2955. 806	D	15	0. 07	4. 24	4½ - 3½		2725. 062	A	4	0. 02	4. 55	2½ - 3½	
m2953. 84	P	Fe I	0. 04	4. 22	3½ - 2½		2717. 433	A	3	0. 02	4. 56	2½ - 3½	a 4F - x 2F°
2949. 62	G	25	0. 02	4. 20	2½ - 1½								(9)
2922. 582	D	4	0. 04	4. 26	3½ - 4½		2707. 589	A	3	0. 07	4. 63	4½ - 3½	a 4F - w 2F°†
2919. 931	H	6	0. 02	4. 24	2½ - 3½		2677. 117	A	(4)	0. 00	4. 61	1½ - 2½	
2925. 880	D	4	0. 00	4. 22	1½ - 2½								(10)
2926. 258	H	12	0. 04	4. 26	3½ - 2½	a 4F - y 2D°							
2915. 33	G	10	0. 02	4. 25	2½ - 1½	(4)							
*2910. 435§	H	5?	0. 02	4. 26	2½ - 2½		2670. 918	A	(7)	0. 04	4. 66	3½ - 2½	a 4F - w 2D°
2903. 700	D	12	0. 00	4. 25	1½ - 1½		2657. 708	A	5	0. 02	4. 66	2½ - 2½	(11)
2898. 822	D	5	0. 00	4. 26	1½ - 2½		2668. 894	A	3	0. 00	4. 62	1½ - 1½	
2923. 627	D	70Ra	0. 07	4. 29	4½ - 3½	a 4F - v 4D°†	2686. 512	A	(10)	0. 07	4. 66	4½ - 5½	a 4F - v 4G°
2914. 924	D	50Ra	0. 04	4. 27	3½ - 2½	(5)	2678. 674	A	(5)	0. 04	4. 65	3½ - 4½	(12)
2906. 134	D	40r	0. 02	4. 26	2½ - 1½		2671. 669	A	(10)	0. 02	4. 64	2½ - 3½	
2899. 602	D	30	0. 00	4. 26	1½ - ½		2665. 958	A	(20)	0. 00	4. 63	1½ - 2½	
2904. 126	D	20	0. 04	4. 29	3½ - 3½		2695. 235	A	4	0. 07	4. 65	4½ - 4½	
2899. 207	D	20	0. 02	4. 27	2½ - 2½		2685. 018	A	5	0. 04	4. 64	3½ - 3½	
2894. 583	D	8	0. 00	4. 26	1½ - 1½		*2675. 753	A	(8)	0. 02	4. 63	2½ - 2½	

V I—Continued

V I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air							Air						
2276. 661	A	3	0.07	5.49	4½-4½	a 'F - s 'G°† (36)	2098. 50	H	(40)	0.07	5.95	4½-5½	a 'F - q 'G°† (47)
2264. 39	A	30 Fe?	0.07	5.52	4½-3½	a 'F - p 'D° (37)	*2096. 19	H	(20)	0.04	5.93	3½-4½	
*2256. 968§	A	50r	0.04	5.51	3½-2½		*2096. 37§	H	(20)	0.02	5.90	2½-3½	
2250. 672	A	30r?	0.02	5.50	2½-1½		2106. 33	H	(15)	0.07	5.89	1½-2½	
2245. 756	A	30	0.00	5.50	1½-½		2104. 57	H	(15)	0.04	5.90	3½-3½	
2252. 681	A	5	0.04	5.52	3½-3½		2102. 23	H	(15)	0.02	5.89	2½-2½	
2247. 520	A	9	0.02	5.51	2½-2½		2092. 44	A	60r	0.07	5.97	4½-4½	a 'F - o 'F° (48)
2243. 742	A	8h	0.00	5.50	1½-1½		2090. 64	A	20r	0.04	5.94	3½-3½	
2241. 846	A	40r	0.07	5.57	4½-4½	a 'F - r 'F°† (38)	*2092. 30	A	10r	0.02	5.92	2½-2½	
2234. 680	A	10	0.04	5.56	3½-3½		2091. 29	A	20r	0.00	5.90	1½-1½	
*2225. 787	A	10	0.02	5.56	2½-2½		2100. 75	A	6	0.07	5.94	4½-3½	
2222. 834	A	15	0.00	5.55	1½-1½		2100. 51	A	8	0.04	5.92	3½-2½	
2230. 362	A	20	0.04	5.57	3½-4½		2097. 34	A	7	0.02	5.90	2½-1½	
2225. 422	A	30	0.02	5.56	2½-3½		*2082. 49	A	20r?	0.04	5.97	3½-4½	
2237. 228	A	50r	0.07	5.58	4½-4½	a 'F - q 'F° (39)	2086. 31	A	8	0.02	5.94	2½-3½	
*2229. 734§	A	25r?	0.04	5.57	3½-3½		2090. 96	H	(10)	0.00	5.90	1½-2½	a 'F - 10°† (49)
2223. 014	A	20	0.02	5.57	2½-2½		2085. 91	H	(20)	0.00	5.92	1½-2½	11°†
2218. 238	A	25r	0.00	5.56	1½-1½		2096. 72	H	(15)	0.04	5.93	3½-	12°
2241. 213	A	7	0.07	5.57	4½-3½		2088. 56	H	(40)	0.02	5.93	2½-	12°
2232. 252	A	8	0.04	5.57	3½-2½		2095. 77	H	(25)	0.04	5.93	3½-3½	13°
2225. 029	A	8	0.02	5.56	2½-1½		2087. 62	H	(10)	0.02	5.93	2½-3½	13°
*2225. 787	A	10	0.04	5.58	3½-4½		2104. 84	H	(20)	0.07	5.93	4½-3½	14°
2216. 245	A	4	0.00	5.57	1½-2½		2094. 71	H	(40)	0.04	5.93	3½-3½	14°
2220. 450	A	3	0.02	5.57	2½-1½	a 'F - u 'P° (40)	*2086. 57	H	15nr	0.02	5.93	2½-3½	14°
2213. 692	A	10	0.00	5.57	1½-1½		2085. 56	H	(10)	0.02	5.93	2½-2½	15°†
2228. 835	A	15	0.04	5.58	3½-3½	a 'F - r 'G°† (41)	2084. 12	H	(10nv)	0.04	5.96	3½-	17°†
2219. 652	A	3	0.04	5.60	3½-4½		2038. 85	H	(90)	0.07	6.12	4½-3½	a 'F - n 'D°† (50)
2231. 412	A	30	0.07	5.60	4½-5½	a 'F - 2a° (42)	2035. 30	H	(80)	0.04	6.10	3½-2½	
2158. 12	A	(15)	0.00	5.72	1½-		2034. 06	H	(90)	0.02	6.08	2½-1½	
2164. 88	A	(15)	0.04	5.74	3½-2½		2032. 27	H	(60)	0.00	6.07	1½-½	
*2146. 64	A	(10)	0.02	5.77	2½-1½		2029. 36	H	(50)	0.04	6.12	3½-3½	
2125. 84	H	(20)	0.04	5.85	3½-3½		2027. 62	H	(40)	0.02	6.10	2½-2½	
*2117. 48§	H	(20)	0.02	5.85	2½-3½		2028. 42	H	(40)	0.00	6.08	1½-1½	a 'F - 21°† (51) 23°†
2124. 15	H	(12)	0.07	5.88	4½-3½		2041. 00	H	(60)	0.04	6.09	3½-2½	
2102. 58	H	(15)	0.02	5.89	2½-		2008. 70	H	(10)	0.04	6.18	3½-	
2204. 930	A	12	0.07	5.67	4½-4½	a 'F - p 'P°† (43)	2010. 48	H	(20)	0.00	6.14	1½-1½?	a 'F - t 'D°† (52)
2200. 174	A	15	0.04	5.65	3½-3½		Vac						
2194. 65	A	10	0.02	5.64	2½-2½		1984. 91	H	(50)	0.07	6.29	4½-5½	a 'F - p 'G°† (53)
2189. 95	A	6	0.00	5.64	1½-1½		1983. 37	H	(50)	0.04	6.26	3½-4½	
2211. 350	A	3	0.07	5.65	4½-3½		1982. 45	H	(40)	0.02	6.24	2½-3½	
2203. 658	A	4	0.04	5.64	3½-2½		1982. 06	H	(40)	0.00	6.23	1½-2½	
2193. 82	A	5	0.04	5.67	3½-4½		1989. 82	H	(12)	0.04	6.24	3½-3½	
m2191. 21	P	V I	0.02	5.65	2½-3½		1967. 98	H	(80?)	0.07	6.34	4½-4½	a 'F - n 'F° (54)
2188. 06	A	3?	0.00	5.64	1½-2½		1966. 52	H	(60)	0.04	6.32	3½-3½	
2196. 29	A	5	0.02	5.64	2½-1½	a 'F - t 'P°† (44)	1965. 26	H	(60)	0.02	6.30	2½-2½	
2202. 724	A	60r	0.07	5.67	4½-3½	a 'F - o 'D°† (45)	1964. 27	H	(60)	0.00	6.28	1½-1½	
2196. 40	A	40r?	0.04	5.66	3½-2½		1975. 42	H	(10)	0.07	6.32	4½-3½	
2191. 10	A	30	0.02	5.65	2½-1½		1972. 48	H	(15)	0.04	6.30	3½-2½	
2187. 39	A	10	0.00	5.64	1½-½		1969. 57	H	(15)	0.02	6.28	2½-1½	
2191. 65	A	3	0.04	5.67	3½-3½		1959. 12	H	(30)	0.04	6.34	3½-4½	
2182. 22	A	120R	0.07	5.72	4½-5½	a 'F - r 'G° (46)	1959. 36	H	(30)	0.02	6.32	2½-3½	
2177. 00	A	100R	0.04	5.71	3½-4½		1959. 97	H	(40)	0.00	6.30	1½-2½	a 'F - m 'D° (55)
2173. 15	A	80R	0.02	5.70	2½-3½		1966. 76	H	(60)	0.07	6.35	4½-3½	
2170. 74	A	60R	0.00	5.69	1½-2½		1965. 07	H	(60)	0.04	6.32	3½-2½	
2187. 95	A	15	0.07	5.71	4½-4½		1963. 47	H	(70)	0.02	6.30	2½-1½	
2181. 97	A	20	0.04	5.70	3½-3½		1961. 69	H	(50)	0.00	6.29	1½-1½	
2177. 24	A	10	0.02	5.69	2½-2½		*1957. 90	H	(50)	0.04	6.35	3½-3½	
							1958. 18	H	(12)	0.02	6.32	2½-2½	
										0.00	6.30	1½-1½	

V I—Continued

V I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2835. 660	D	5	0. 27	4. 63	2½-3½?	<i>a</i> ⁴D - <i>w</i> ²F° (56)	Air *2778. 058	H	4	1. 08	5. 52	3½-3½?	<i>a</i> ⁴D - <i>p</i> ⁴D°† (69)
2618. 908	A	5	0. 27	4. 98	1½-2½	<i>a</i> ⁴D - <i>u</i> ²D° (57)	*2774. 01	G	3	1. 06	5. 51	2½-2½	
2497. 655	A	6h	0. 27	5. 22	2½-3½	<i>a</i> ⁴D - <i>r</i> ⁴D°† (58)	2689. 114	A	3	1. 08	5. 67	3½-4½	<i>a</i> ⁴D - <i>p</i> ⁴F°† (70)
2480. 606	A	(30h)	0. 30	5. 27	4½-4½?	<i>a</i> ⁴D - <i>w</i> ⁶D° (59)	m2688. 71	P	V II	1. 06	5. 65	2½-3½	
2482. 115	A	(20h)	0. 29	5. 26	3½-3½?		m2686. 49	P	V I	1. 05	5. 64	1½-2½	
2489. 13	A	4h	0. 30	5. 26	4½-3½?		m2693. 67	P	V I	1. 08	5. 65	3½-3½	
2488. 737	A	4h	0. 29	5. 24	3½-2½?		2693. 918	A	6	1. 06	5. 64	2½-2½	
2473. 652	A	5h	0. 29	5. 27	3½-4½?		2696. 760	A	(6)	1. 06	5. 64	2½-1½	
2476. 510	A	7h	0. 27	5. 26	2½-3½?		2688. 942	A	4	1. 05	5. 64	1½-1½	<i>a</i> ⁴D - <i>t</i> ⁴P°† (71)
2478. 97	A	5h	0. 27	5. 24	1½-2½?		2685. 843	A	4	1. 08	5. 67	3½-3½	<i>a</i> ⁴D - <i>o</i> ⁴D°† (72)
2392. 898	A	40h	0. 30	5. 46	4½-5½	<i>a</i> ⁴D - <i>x</i> ⁶F° (60)	m2683. 08	P	V II	1. 06	5. 66	2½-2½	
2386. 409	A	20h	0. 29	5. 46	3½-4½?		*2686. 515	A	4	1. 05	5. 64	1½-½	
*2391. 268	A	30h	{ 0. 27	5. 44	2½-3½?		2675. 977	A	4	1. 06	5. 67	2½-3½	
			{ 0. 27	5. 43	1½-2½?		*2675. 753	A	(8)	1. 05	5. 66	1½-2½	
							2676. 636	A	3	1. 04	5. 65	½-1½	
2395. 429	A	10h	0. 26	5. 41	½-1½?		2620. 284	A	(20)	1. 08	5. 79	3½-2½	<i>a</i> ⁴D - <i>t</i> ⁴P°† (73)
2396. 492	A	15h	0. 29	5. 44	3½-3½?		2611. 255	A	8	1. 06	5. 79	2½-1½	
2395. 104	A	30h	0. 27	5. 43	2½-2½?		2605. 084	A	4	1. 05	5. 78	1½-½	
*2397. 775	A	40h	0. 27	5. 41	1½-1½?		2610. 891	A	6	1. 06	5. 79	2½-2½	
2403. 362	A	5h	0. 26	5. 40	½-½?		2604. 294	A	5	1. 05	5. 79	1½-1½	
2403. 029	A	10h	0. 30	5. 44	4½-3½?		2600. 798	A	5	1. 04	5. 78	½-½	
2405. 245	A	10h	0. 30	5. 43	4½-3½?	<i>a</i> ⁴D - <i>x</i> ⁶P° (61)							
2398. 697	A	10h	0. 29	5. 43	3½-3½?		3016. 17	G	20	1. 21	5. 30	2½-1½	<i>a</i> ⁴P - <i>w</i> ⁴S° (74)
2394. 270	A	10	0. 30	5. 45	4½-5½	<i>a</i> ⁴D - <i>s</i> ⁴G°† (62)	2999. 20	G	12	1. 19	5. 30	1½-1½	
							2990. 93	G	8	1. 18	5. 30	½-1½	
*2146. 64	A	(10)	0. 29	6. 03	3½-2½	<i>a</i> ⁴D - 18°†	2963. 818	D	6	1. 21	5. 38	2½-3½	<i>a</i> ⁴P - <i>q</i> ⁴D°† (75)
2138. 62	H	(10)	0. 27	6. 04	2½-2½	(63) 19°†	*2976. 527\$	D	8	1. 21	5. 36	2½-2½	
*2092. 30	H	(10r)	0. 29	6. 18	3½-	23°	2968. 981	D	3	1. 19	5. 35	1½-1½	
*2086. 57	H	(15nr)	0. 27	6. 19	2½-2½	24°†	2974. 217	H	8	1. 19	5. 34	1½-½	
2077. 16	H	(15)	0. 29	6. 23	3½-	28°†	2961. 127	D	10	1. 21	5. 38	2½-2½	<i>a</i> ⁴P - <i>u</i> ⁴P°† (76)
2012. 35	H	(20)	0. 27	6. 40	1½-1½	32°†	2968. 29	G	5	1. 21	5. 37	2½-1½	
2011. 54	H	(15)	0. 29	6. 42	3½-	33°†	2957. 176	H	8h	1. 19	5. 36	1½-½	
							2944. 76	G	10h	1. 19	5. 38	1½-2½	
							2943. 84	G	12h	1. 18	5. 37	½-1½	
3002. 65	G	8	1. 08	5. 19	3½-2½	<i>a</i> ⁴D - <i>v</i> ⁴P°† (64)	2866. 447	D	20	1. 21	5. 52	2½-3½	<i>a</i> ⁴P - <i>p</i> ⁴D°† (77)
3004. 82	G	10	1. 06	5. 17	2½-1½		2857. 972	D	20	1. 19	5. 51	1½-2½	
3004. 33	G	4	1. 05	5. 15	1½-½		2855. 518	D	6	1. 18	5. 50	½-1½	
2995. 617	D	4	1. 05	5. 17	1½-1½		2863. 076	D	12	1. 19	5. 50	1½-1½	
2998. 62	G	4	1. 04	5. 15	½-½		2858. 787	D	10	1. 18	5. 50	½-½	
2981. 537	H	0	1. 08	5. 22	3½-3½	<i>a</i> ⁴D - <i>r</i> ⁴D°† (65)	2768. 30	G	3	1. 21	5. 67	2½-3½	<i>a</i> ⁴P - <i>o</i> ⁴D°† (78)
2978. 936	D	4	1. 06	5. 20	2½-2½								
2893. 47	G	4h	1. 08	5. 34	3½-4½	<i>a</i> ⁴D - <i>s</i> ⁴F°† (66)							
2869. 484	D	3	1. 08	5. 38	3½-3½	<i>a</i> ⁴D - <i>q</i> ⁴D° (67)	2698. 724	A	(40)	1. 21	5. 79	2½-2½	<i>a</i> ⁴P - <i>t</i> ⁴P° (79)
*2870. 04	G	5	{ 1. 06	5. 36	2½-2½		*2685. 515	A	4	1. 19	5. 79	1½-1½	
			{ 1. 05	5. 35	1½-1½		2679. 707	A	5	1. 18	5. 78	½-½	
							2699. 12	A	(20)	1. 21	5. 79	2½-1½	
							2686. 356	A	9	1. 19	5. 78	1½-½	
							*2685. 148	A	(15)	1. 19	5. 79	1½-2½	
							2678. 878	A	10	1. 18	5. 79	½-1½	
2866. 971	D	10	1. 08	5. 38	3½-2½	<i>a</i> ⁴D - <i>u</i> ⁴P°† (68)	2514. 41	A	10h	1. 21	6. 12	2½-3½?	<i>a</i> ⁴P - <i>n</i> ⁴D°† (80)
2862. 418	D	10	1. 06	5. 37	2½-1½								
2859. 001	D	4h	1. 05	5. 36	1½-½								
*2854. 057	D	4h	1. 05	5. 37	1½-1½								
2853. 82	G	3h	1. 04	5. 36	½-½								

V I—Continued

V I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
*2482. 711	A	(15h)	1. 21	6. 18	2½—	a ⁴ P — 23° (81)	2275. 475	A	3	1. 70	7. 13	½— ½?	a ⁴ P — s ³ P° (93)
2996. 48	G	6	1. 37	5. 49	4½—4½	a ² G — s ² G° (82)	2284. 494	A	20	1. 70	7. 13	1½— ½?	
2975. 077	D	8	1. 34	5. 49	3½—3½		2284. 982	A	3	1. 70	7. 11	½—1½?	
2917. 94	G	8	1. 37	5. 60	4½—4½	a ² G — r ² G° (83)	2839. 43	G	4	1. 79	6. 14	1½—1½	a ² D — t ² D°† (94)
2916. 00	G	8	1. 34	5. 58	3½—3½		2324. 189	A	10	1. 80	7. 11	2½—1½?	
2773. 66	G	8	1. 37	5. 82	4½—3½	a ² G — s ² F°† (84)	2312. 531	A	10	1. 79	7. 13	1½— ½?	a ² D — s ³ P° (95)
2768. 93	G	6	1. 34	5. 80	3½—2½								
2731. 347	A	(80r?)	1. 37	5. 89	4½—5½	a ² G — s ² H° (85)							
2722. 560	A	(60r)	1. 34	5. 88	3½—4½		*2854. 057	D	4h	1. 85	6. 17	4½—5½?	a ⁴ H — x ² I° (96)
2738. 075	A	5	1. 37	5. 88	4½—4½		2481. 11	A	10h	1. 84	6. 81	3½—2½	
2697. 744	A	(50r?)	1. 37	5. 95	4½—4½	a ² G — q ² G°† (86)	2868. 130	D	20	1. 88	6. 19	5½—6½	
2696. 996	A	(40r?)	1. 34	5. 92	3½—3½		2866. 620	D	15	1. 86	6. 17	4½—5½	a ⁴ H — 34° (97)
2712. 217	A	4	1. 37	5. 92	4½—3½								
2534. 825	A	15h	1. 37	6. 24	4½—3½	a ² G — r ² F°† (87)	2652. 919	A	(20)	1. 88	6. 54	5½—4½	a ² H — p ² G° (99)
*2482. 711	A	(15h)	1. 37	6. 34	4½—4½	a ² G — n ⁴ F° (88)	2653. 824	A	(25)	1. 86	6. 51	4½—3½	
2388. 910	A	40	1. 37	6. 54	4½—4½	a ² G — p ² G° (89)	2564. 228	A	(20h)	1. 88	6. 70	5½—5½	a ² H — r ² H° (100)
2386. 956	A	40	1. 34	6. 51	3½—3½		*2564. 817	A	(40r?)	1. 86	6. 68	4½—4½	
2398. 877	A	4	1. 37	6. 51	4½—3½								
2377. 083	A	3	1. 34	6. 54	3½—4½								
2316. 751	A	25	1. 37	6. 70	4½—5½	a ² G — r ² H° (90)	2934. 72	G	20h	2. 12	6. 32	6½—6½	
2314. 691	A	20	1. 34	6. 68	3½—4½		2930. 89	G	15h	2. 09	6. 30	5½—5½	
							2927. 646	D	10h	2. 07	6. 28	4½—4½	
							2924. 92	G	5h	2. 05	6. 26	3½—3½	
							2922. 715	H	5h	2. 03	6. 25	2½—2½	
2852. 899	D	25	1. 70	6. 03	1½— ½	a ² P — v ² S°† (91)	2921. 18	G	6h	2. 02	6. 24	1½—1½?	
							2949. 91	G	2h	2. 12	6. 30	6½—5½?	
2785. 66	G	10	1. 70	6. 13	1½—2½	a ² P — t ² D° (92)	m2943. 88	P	V I	2. 09	6. 28	5½—4½	
2783. 76	G	7	1. 70	6. 14	½—1½		2938. 30	F	5h	2. 07	6. 26	4½—3½	
							2933. 234	H	3h	2. 05	6. 25	3½—2½	

Strongest Unclassified Lines of V I

2846. 600	D	20	IV				2511. 182	A	20h				
2755. 653	A	(10)	V				2498. 024	A	(10h)				
2731. 518	A	(20h?)	IV				2475. 178	A	10				
2656. 55	A	10					2465. 664	A	10h				
*2637. 222\$	A	(20H)	III				2216. 666	A	10				
2607. 752	A	(10)	III				2089. 94	H	(20)				
2568. 376	A	30h					2079. 56	H	(15dr?)				
2533. 800	A	10h					2072. 75	H	(10)				
2520. 31	A	10h					2043. 13	H	(20)				
2514. 322	A	15h					2041. 74	H	(10N)				

V II

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REFERENCE

A W. F. Meggers and C. E. Moore, J. Research Nat. Bur. Std. 25, 83, RP1317 (1940). W L, I, T
 * and §§ = Blend Fe III?

V II

V II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2700. 944	A	300r	0.04	4.61	4-5	$a^4D - z^4F^\circ$	2140. 064	A	150	0.04	5.81	4-3	$a^4D - z^4P^\circ$
2706. 17	A	200rs	0.03	4.59	3-4	(1)	2141. 973	A	100	0.03	5.79	3-2	(7)
*2715. 676	A	180rs	0.01	4.56	2-3		2143. 038	A	60	0.01	5.77	2-1	
2728. 644	A	150	0.00	4.53	1-2		2134. 12	A	200	0.03	5.81	3-3	
2739. 715	A	100	0.00	4.50	0-1		2137. 31	A	100	0.01	5.79	2-2	
*2715. 676	A	180rs	0.04	4.59	4-4		2139. 798	A	100	0.00	5.77	1-1	
2723. 218	A	20	0.03	4.56	3-3		2129. 477	A	40	0.01	5.81	2-3	
2733. 906	A	25	0.01	4.53	2-2		m2134. 07	P	V II	0.00	5.79	1-2	
2742. 43	A	25	0.00	4.50	1-1		2138. 17	A	60	0.00	5.77	0-1	
2732. 92	A	5	0.04	4.56	4-3								
2741. 563	A	4	0.03	4.53	3-2		2123. 340	A	60	0.04	5.85	4-4	$a^4D - y^4D^\circ$
2711. 740	A	100	0.04	4.59	4-3	$a^4D - z^4D^\circ$	2128. 241	A	7	0.03	5.82	3-3	(8)
2714. 205	A	50	0.03	4.57	3-2	(2)	m2134. 16	P	V III	0.04	5.82	4-3	
2713. 050	A	40	0.01	4.56	2-1		2131. 85	A	80	0.03	5.81	3-2	
2702. 185	A	200r	0.03	4.59	3-3		2126. 932	A	20	0.01	5.82	2-1	
2706. 70	A	150r	0.01	4.57	2-2		2127. 34	A	5	0.00	5.81	1-0	
2707. 86	A	100	0.00	4.56	1-1		*2117. 482§	A	12	0.03	5.85	3-4	
2694. 74	A	20H	0.01	4.59	2-3		2123. 62	A	10	0.01	5.82	2-3	
2701. 535	A	10	0.00	4.57	1-2		2124. 00	A	5d?	0.00	5.81	1-2	
2705. 220	A	40	0.00	4.56	0-1		2122. 11	A	1	0.00	5.82	0-1	
2687. 960	A	300r	0.04	4.63	4-4	$a^4D - z^4D^\circ$	Vac						
2679. 327	A	200r	0.03	4.63	3-3	(3)	1920. 36	A	12	0.01	6.44	2-1?	$a^4D - z^4S^\circ$
2682. 875	A	100	0.01	4.61	2-2								(9)
2685. 689	A	30	0.00	4.60	1-1								
2688. 717	A	100	0.04	4.63	4-3		Air						
2690. 252	A	150	0.03	4.61	3-2		2924. 017	A	300R	0.39	4.61	5-5	$a^4F - z^4F^\circ$
2690. 792	A	200	0.01	4.60	2-1		2924. 633	A	250R	0.37	4.59	4-4	(10)
2689. 883	A	100	0.00	4.59	1-0		2930. 798	A	150r	0.35	4.56	3-3	
2678. 572	A	100r	0.03	4.63	3-4		2941. 485	A	100	0.33	4.53	2-2	
2672. 005	A	150r	0.01	4.63	2-3		2950. 344	A	80	0.32	4.50	1-1	
2677. 804	A	150r	0.00	4.61	1-2		2941. 372	A	200	0.39	4.59	5-4	
2683. 09	A	100	0.00	4.60	0-1		2944. 568	A	250r	0.37	4.56	4-3	
2545. 460	A	15	0.04	4.89	4-5	$a^4D - z^4G^\circ \dagger$	2952. 07	A	150r	0.35	4.53	3-2	
2493. 576	A	15	0.04	4.99	4-4	$a^4D - z^4F^\circ \dagger$	2957. 520	A	100	0.33	4.50	2-1	
2500. 076	A	4	0.03	4.96	3-3	(5)	2907. 457	A	120	0.37	4.61	4-5	
2148. 42	A	40	0.03	5.77	3-2	$a^4D - z^4F^\circ$	2911. 050	A	160r	0.35	4.59	3-4	
2145. 990	A	40	0.01	5.76	2-1	(6)	*2920. 377	A	100	0.33	4.56	2-3	
2147. 52	A	20	0.00	5.75	1-0		2934. 394	A	60	0.32	4.53	1-2	
2143. 706	A	5	0.01	5.77	2-2		2919. 989	A	50	0.37	4.59	4-3	$a^4F - z^4D^\circ$
2142. 74	A	4	0.00	5.76	1-1		*2920. 377	A	100	0.35	4.57	3-2	(11)
							2917. 365	A	50	0.33	4.56	2-1	
							2906. 448	A	150r	0.35	4.59	3-3	
							2910. 007	A	140r	0.33	4.57	2-2	
							*2910. 380§	A	150r	0.32	4.56	1-1	
							2896. 198	A	100	0.33	4.59	2-3	
							2903. 068	A	100	0.32	4.57	1-2	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air							Vac						
2908. 810	A	300R	0. 39	4. 63	5-4	<i>a</i> $^4F - z$ $^4D^\circ$ (12)	1587. 40	A	50	0. 39	8. 17	5-4	<i>a</i> $^4F - z$ $^4D^\circ$ (19)
2893. 314	A	250r	0. 37	4. 63	4-3		1586. 58	A	40	0. 37	8. 15	4-3	
2892. 650	A	200r	0. 35	4. 61	3-2		1585. 361	A	30	0. 35	8. 13	3-2	
2891. 636	A	150r	0. 33	4. 60	2-1		1584. 06	A	15	0. 33	8. 13	2-1	
2889. 614	A	100	0. 32	4. 59	1-0		1582. 80	A	8	0. 32	8. 12	1-0	
2892. 434	A	150r	0. 37	4. 63	4-4		*1582. 57	A	15	(0. 37	8. 17	4-4	
2880. 026	A	150	0. 35	4. 63	3-3				(0. 35	8. 15	3-3		
2882. 493	A	120	0. 33	4. 61	2-2		1582. 32	A	8	0. 33	8. 13	2-2	
*2884. 776	A	150	0. 32	4. 60	1-1		1581. 99	A	8	0. 32	8. 13	1-1	
2879. 158	A	40	0. 35	4. 63	3-4								
2869. 957	A	10	0. 33	4. 63	2-3		1547. 20	A	15	0. 39	8. 37	5-6?	<i>a</i> $^4F - y$ $^4G^\circ$ (20)
2875. 687	A	30	0. 32	4. 61	1-2		1553. 09	A	15	0. 37	8. 32	4-5?	
2742. 670	A	30	0. 39	4. 89	5-5	<i>a</i> $^4F - z$ $^3G^\circ$ (13)	1558. 76	A	15	0. 35	8. 27	3-4?	
2743. 768	A	20	0. 37	4. 86	4-4		1562. 98	A	10	0. 33	8. 23	2-3?	
2744. 54	A	4	0. 35	4. 84	3-3		1571. 74	A	2	0. 32	8. 18	1-2?	
*2758. 53	A	9H1	0. 39	4. 86	5-4		1565. 98	A	8	0. 35	8. 23	3-3?	
2682. 535	A	6	0. 39	4. 99	5-4	<i>a</i> $^4F - z$ $^3F^\circ$ (14)	1573. 78	A	0	0. 33	8. 18	2-2?	
*2685. 41	A	1?	0. 37	4. 96	4-3								
2668. 595	A	4	0. 37	4. 99	4-4								
2673. 955	A	4	0. 35	4. 96	3-3								
m2657. 26	P	V II	0. 35	4. 99	3-4								
2665. 277	A	3	0. 33	4. 96	2-3								
2275. 586	A	7	0. 35	5. 77	3-2	<i>a</i> $^4F - z$ $^3P^\circ$ (15)	2514. 633	A	200	1. 12	6. 03	4-5	<i>a</i> $^4F - y$ $^4G^\circ$ (21)
2271. 848	A	10	0. 33	5. 76	2-1		2506. 215	A	200	1. 09	6. 02	3-4	
*2273. 024	A	40h	0. 32	5. 75	1-0		2503. 018	A	180	1. 07	6. 00	2-3	
2269. 293	A	3	0. 33	5. 77	2-2		2522. 392	A	6	1. 12	6. 02	4-4	
2267. 612	A	5	0. 32	5. 76	1-1		2515. 722	A	9	1. 09	6. 00	3-3	
*2258. 814\$	A	50	0. 39	5. 85	5-4	<i>a</i> $^4F - y$ $^3D^\circ$ (16)	2488. 616	A	6	1. 12	6. 08	4-4	<i>a</i> $^4F - y$ $^3F^\circ$ (22)
2261. 084	A	30	0. 37	5. 82	4-3		2646. 65	A	1	1. 07	6. 07	2-2	
*2256. 984\$	A	20	0. 35	5. 81	3-2		2476. 963	A	1	1. 09	6. 07	3-2	
2250. 490	A	5	0. 33	5. 82	2-1		2472. 870	A	5	1. 09	6. 08	3-4	
2250. 382	A	3	0. 32	5. 81	1-0		2464. 094	A	15	1. 07	6. 08	2-3	
2248. 913	A	4	0. 37	5. 85	4-4		2468. 654	A	8	1. 12	6. 12	4-5	<i>a</i> $^4F - z$ $^1H^\circ$ (23)
2252. 953	A	7	0. 35	5. 82	3-3		2434. 94	A	5?	1. 09	6. 16	3-2	<i>a</i> $^4F - z$ $^1D^\circ$ (24)
2250. 800	A	5	0. 33	5. 81	2-2		2423. 030	A	6	1. 07	6. 16	2-2	
2246. 332	A	3	0. 32	5. 82	1-1		2380. 910	A	120	1. 12	6. 31	4-3	<i>a</i> $^4F - y$ $^3D^\circ$ (25)
*2246. 65	A	1?	0. 32	5. 81	1-2		2383. 995	A	80	1. 09	6. 27	3-2	
Vac							2389. 696	A	100	1. 07	6. 23	2-1	
1677. 88	A	3	0. 39	7. 75	5-4	<i>a</i> $^4F - z$ 1	2366. 490	A	25	1. 09	6. 31	3-3	
1672. 44	A	15	0. 37	7. 75	4-4	(17)	2372. 584	A	20	1. 07	6. 27	2-2	
1636. 02	A	40	0. 39	7. 94	5-5	<i>a</i> $^4F - y$ $^3F^\circ$ (18)	2355. 232	A	4	1. 07	6. 31	2-3	
1637. 77	A	50	0. 37	7. 90	4-4		2294. 992	A	40	1. 12	6. 50	4-4	<i>a</i> $^4F - z$ $^3F^\circ$ (26)
1639. 13	A	40	0. 35	7. 88	3-3		2295. 504	A	20	1. 09	6. 47	3-3	
1640. 15	A	35	0. 33	7. 86	2-2		*2292. 588	A	30	1. 07	6. 45	2-2	
1640. 86	A	30	0. 32	7. 85	1-1		2309. 072	A	10	1. 12	6. 47	4-3	
*1643. 02	A	30	0. 39	7. 90	5-4		2303. 238	A	10	1. 09	6. 45	3-2	
*1643. 43	A	30	{ 0. 37	7. 88	4-3		*2281. 601	A	60	1. 09	6. 50	3-4	
*1643. 02	A	30	{ 0. 35	7. 86	3-2		2284. 920	A	15	1. 07	6. 47	2-3	
1630. 82	A	20	0. 37	7. 94	4-5		2289. 219	A	70	1. 12	6. 51	4-3	<i>a</i> $^4F - z$ $^3D^\circ$ (27)
1633. 51	A	25	0. 35	7. 90	3-4		2279. 376	A	15	1. 09	6. 51	3-2	
1635. 86	A	20	0. 33	7. 88	2-3		2273. 89	A	2	1. 07	6. 49	2-1	
1637. 93	A	10	0. 32	7. 86	1-2		2275. 883	A	7	1. 09	6. 51	3-3	

VII—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2346. 868	A	25	1. 55	6. 81	4-3	$a^3H - y^1F^o$ (54)	Air 2542. 935	A	15	1. 67	6. 52	2-1	$b^3F - z^1P^o$ (70)
2352. 177	A	100	1. 57	6. 82	6-5	$a^3H - x^1G^o$ (55)	2479. 518	A	180	1. 68	6. 66	4-3	$b^3F - w^1D^o$ (71)
2342. 142	A	60+h	1. 56	6. 83	5-4		2479. 043	A	200	1. 67	6. 65	3-2	
2335. 480	A	40	1. 55	6. 83	4-3		2483. 064	A	120	1. 67	6. 64	2-1	
2347. 507	A	8	1. 56	6. 82	5-5		2475. 451	A	20	1. 67	6. 66	3-3	
2337. 956	A	4	1. 55	6. 83	4-4		2475. 865	A	30	1. 67	6. 65	2-2	
2341. 358	A	4	1. 57	6. 84	6-6	$a^3H - z^1I^o$ (56)	2406. 989	A	5	1. 68	6. 81	4-3	$b^3F - y^1F^o$ (72)
							2400. 166	A	4	1. 67	6. 81	2-3	
2336. 098	A	30	1. 57	6. 85	6-5	$a^3H - y^1H^o$ (57)	2403. 240	A	9	1. 68	6. 82	4-5	$b^3F - x^1G^o$ (73)
Vac 1938. 70	A	8	1. 57	7. 94	6-5	$a^3H - y^1F^o$	2393. 814	A	8	1. 67	6. 83	3-4	
*1945. 3555	A	30	1. 56	7. 90	5-4	(58)	2388. 260	A	5	1. 67	6. 83	2-3	
							2397. 622	A	6	1. 68	6. 83	4-4	
							2391. 226	A	10h	1. 67	6. 83	3-3	
1940. 86	A	40	1. 57	7. 93	6-5	$a^3H - w^1G^o$	2058. 34	A	40	1. 68	7. 68	4-4	$b^3F - w^1F^o$ (74)
1941. 40	A	30	1. 56	7. 92	5-4	(59)	2057. 36	A	25	1. 67	7. 67	3-3	
1941. 27	A	30	1. 55	7. 91	4-3		2057. 20	A	15	1. 67	7. 66	2-2	
1937. 68	A	7	1. 56	7. 93	5-5		2055. 55	A	8	1. 67	7. 68	3-4	
1938. 50	A	10	1. 55	7. 92	4-4		2055. 15	A	5	1. 67	7. 67	2-3	
Air 2967. 545		5	1. 68	5. 84	4-5	$b^3F - z^1H^o$	Vac 1833. 58	A	10	1. 68	8. 41	4-4	$b^3F - v^1F^o$ (75)
*2983. 009	A	10	1. 67	5. 81	3-4	(60)	1839. 54	A	20	1. 67	8. 38	3-3	
							1843. 43	A	5	1. 67	8. 36	2-2	
2836. 527	A	80	1. 68	6. 03	4-5	$b^3F - y^1G^o$	1807. 15	A	1	1. 68	8. 51	4-3	$b^3F - u^1D^o$ (76)
2841. 039	A	50	1. 67	6. 02	3-4	(61)	*1809. 81	A	8d?	1. 67	8. 49	3-2	
2849. 055	A	40	1. 67	6. 00	2-3		1809. 36	A	10e	1. 67	8. 49	2-1	
2803. 469	A	150	1. 68	6. 08	4-4	$b^3F - y^1F^o$ (62)	Air 2777. 748	A	80	1. 70	6. 14	3-2	$a^3P - z^1S^o$ (77)
2802. 796	A	100	1. 67	6. 08	3-3		2766. 460	A	60	1. 68	6. 14	2-2	
2799. 451	A	100	1. 67	6. 07	2-2		2760. 122	A	40	1. 67	6. 14	1-2	
2808. 023	A	4	1. 68	6. 08	4-3								
2780. 09		5+H	1. 68	6. 12	4-3	$b^3F - z^1F^o$	2544. 29	A	10H	1. 67	6. 52	1-1	$a^3P - z^1P^o$ (78)
2774. 976	A	30	1. 67	6. 12	3-3	(63)							
2770. 99	A	4	1. 67	6. 12	2-3								
2768. 150	A	15	1. 68	6. 14	4-4	$b^3F - z^1G^o$ (64)	2039. 29	A	60	1. 70	7. 75	3-4	$a^3P - z^1P^o$ (79)
							Vac 1907. 79	A	50	1. 70	8. 17	3-4	$a^3P - x^1D^o$ (80)
*2758. 53	A	9H1	1. 67	6. 14	2-2	$b^3F - z^1S^o$ (65)	1908. 32	A	40h	1. 68	8. 15	2-3	
							1909. 36	A	40	1. 67	8. 13	1-2	
2745. 893	A	6	1. 67	6. 16	2-2	$b^3F - z^1D^o$ (66)	1913. 70	A	50	1. 70	8. 15	3-3	
							1912. 39	A	40	1. 68	8. 13	2-2	
							1911. 88	A	40	1. 67	8. 13	1-1	
							1917. 79	A	15	1. 70	8. 13	3-2	
2667. 532	A	4	1. 68	6. 31	4-3	$b^3F - y^1D^o$	1914. 91	A	15	1. 68	8. 13	2-1	
2703. 15	A	3	1. 67	6. 23	2-1	(67)	1913. 10	A	20	1. 67	8. 12	1-0	
*2560. 149	A	4	1. 68	6. 50	4-4	$b^3F - x^1F^o$							
2577. 682	A	40	1. 68	6. 47	4-3	(68)	Air 2923. 340	A	20	1. 81	6. 03	5-5	$a^3G - y^1G^o$ (81)
2583. 007	A	20	1. 67	6. 45	3-2		2925. 288	A	15	1. 80	6. 02	4-4	
2552. 960	A	60	1. 68	6. 51	4-3	$b^3F - x^1D^o$	2930. 132	A	25	1. 79	6. 00	3-3	
2553. 028	A	40	1. 67	6. 51	3-2	(69)	2933. 833	A	15	1. 81	6. 02	5-4	
2555. 905	A	40	1. 67	6. 49	2-1		2938. 259	A	20	1. 80	6. 00	4-3	
m2548. 65	P	V II	1. 67	6. 51	3-3		*2914. 87 §	A	10	1. 80	6. 03	4-5	
2549. 653	A	10	1. 67	6. 51	2-2		2917. 230	A	7	1. 79	6. 02	3-4	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)		
			Low	High						Low	High				
Air							Vac								
2888. 244	A	80	1. 81	6. 08	5-4	a "G -y "F°	*1869. 47	A	50	1. 81	8. 41	5-4	a "G -v "F°		
*2884. 776	A	150	1. 80	6. 08	4-3	(82)	1874. 45	A	12	1. 80	8. 38	4-3	(97)		
2877. 689	A	60	1. 79	6. 07	3-2		1877. 00	A	10	1. 79	8. 36	3-2			
m2879. 97	P	V II	1. 80	6. 08	4-4		1865. 99	A	3	1. 80	8. 41	4-4			
2876. 939	A	9	1. 79	6. 08	3-3		1799. 47	A	12	1. 81	8. 67	5-5			
							1806. 49	A	8h	1. 80	8. 63	4-4	a "G -v "G°†		
							*1809. 81	A	8d?	1. 81	8. 63	5-4?	(98)		
2855. 298	A	40	1. 80	6. 12	4-3	a "G -z "F°	1613. 20	A	15	1. 81	9. 46	5-4	a "G -u "F°		
						(83)	1617. 35	A	10	1. 80	9. 43	4-3	(99)		
2861. 401	A	5	1. 81	6. 12	5-5	a "G -z "H°	1619. 18	A	10	1. 79	9. 41	3-2			
2850. 765	A	20	1. 81	6. 14	5-4	a "G -z "G°									
2842. 699	A	4	1. 80	6. 14	4-4	(85)	Air								
							2798. 755	A	80	2. 04	6. 45	5-6	b "G -y "H°		
							2797. 795	A	70	2. 03	6. 44	4-5	(100)		
2821. 124	A	15	1. 79	6. 16	3-2	a "G -z "D°	2797. 017	A	60	2. 02	6. 43	3-4			
						(86)	2806. 544	A	4	2. 04	6. 44	5-5			
2736. 69	A	10	1. 80	6. 31	4-3	a "G -y "D°†	2581. 839	A	4	2. 03	6. 81	4-3	b "G -y "F°		
						(87)	2576. 478	A	20	2. 02	6. 81	3-3	(101)		
*2658. 97	A	30	{1. 81	6. 45	5-6	a "G -y "H°	2584. 951	A	80	2. 04	6. 82	5-5	b "G -z "G°†		
			{1. 80	6. 44	4-5	(88)	2571. 059	A	50	2. 03	6. 83	4-4	(102)		
2657. 295	A	10	1. 79	6. 43	3-4		2562. 760	A	30	2. 02	6. 83	3-3			
2630. 665	A	150	1. 81	6. 50	5-4	a "G -x "F°	2578. 451	A	8	2. 04	6. 83	5-4			
2642. 212	A	80	1. 80	6. 47	4-3	(89)	2568. 065	A	3	2. 03	6. 83	4-3			
2645. 840	A	80	1. 79	6. 45	3-2		2565. 543	A	15	2. 04	6. 85	5-5	b "G -y "H		
2623. 792	A	15+H	1. 80	6. 50	4-4			2190. 22	A	30	2. 04	7. 68	5-4	(103)	
2635. 640	A	10	1. 79	6. 47	3-3		2186. 94	A	20	2. 03	7. 67	4-3	b "G -w "F°†		
2616. 24	A	40	1. 80	6. 51	4-3	a "G -z "D°	*2185. 39	A	50	2. 02	7. 66	3-2	(104)		
2614. 395	A	10	1. 79	6. 51	3-2	(90)		2095. 94	A	25	2. 04	7. 93	5-5	b "G -w "G°†	
*2609. 80	A	5	1. 79	6. 51	3-3			2095. 37	A	15	2. 03	7. 92	4-4	(105)	
2463. 157	A	3	1. 80	6. 81	4-3	a "G -y "F°			2095. 05	A	15	2. 02	7. 91	3-3	
2457. 446	A	30	1. 79	6. 81	3-3	(91)									
2465. 270	A	150	1. 81	6. 82	5-5	a "G -x "G°	Vac								
2453. 346	A	80	1. 80	6. 83	4-4	(92)	1937. 44	A	60	2. 04	8. 41	5-4	b "G -v "F°		
2444. 967	A	60	1. 79	6. 83	3-3		1942. 35	A	40	2. 03	8. 38	4-3	(106)		
2459. 358	A	15	1. 81	6. 83	5-4		1945. 64	A	30	2. 02	8. 36	3-2			
2450. 619	A	9	1. 80	6. 83	4-3		1933. 28	A	10	2. 03	8. 41	4-4			
2459. 233	A	5	1. 80	6. 82	4-5		1939. 32	A	8	2. 02	8. 38	3-3			
2447. 608	A	20	1. 81	6. 85	5-5	a "G -y "H°	1903. 86	A	5?	2. 03	8. 51	4-3?	b "G -w "D°		
2441. 664	A	4h	1. 80	6. 85	4-5	(93)							(107)		
2103. 70	A	80	1. 81	7. 68	5-4	a "G -w "F°†	1862. 37	A	30	2. 04	8. 67	5-5	b "G -v "G°		
2101. 17	A	50	1. 80	7. 67	4-3	(94)	*1869. 47	A	50	2. 03	8. 63	4-4	(108)		
2099. 16	A	30	1. 79	7. 66	3-2		1876. 06	A	20	2. 02	8. 60	3-3			
*2014. 18	A	90	1. 81	7. 94	5-5	a "G -y "F°	1873. 39	A	10	2. 04	8. 63	5-4			
2025. 47	A	15	1. 79	7. 88	3-3	(95)	1878. 90	A	10	2. 03	8. 60	4-3			
2024. 84	A	???	1. 81	7. 90	5-4?		1858. 50	A	2	2. 03	8. 67	4-5			
2010. 15	A	5h	1. 80	7. 94	4-5		1866. 68	A	5	2. 02	8. 63	3-4			
*2016. 53	A	60	{1. 81	7. 93	5-5	a "G -w "G°	1663. 60	A	15	2. 04	9. 46	5-4	b "G -u "F°		
*2015. 74	A	20	{1. 80	7. 92	4-4	(96)	1667. 66	A	10	2. 03	9. 43	4-3	(109)		
2020. 54	A	10	1. 81	7. 92	5-4		1670. 01	A	10	2. 02	9. 41	3-2			
2019. 47	A	10	1. 80	7. 91	4-3		1660. 53	A	8	2. 03	9. 46	4-4			
*2012. 64	A	10	1. 79	7. 92	3-4		1665. 42	A	8e	2. 02	9. 43	3-3			

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air							Air						
*2685. 138	A	20	2. 21	6. 81	4-3	a ¹ G -y ¹ F° (110)	2007. 66	A	25	2. 27	8. 41	3-4	a ³ D -w ¹ F° (126)
2680. 470	A	8	2. 21	6. 82	4-5	a ¹ G -z ¹ G° (111)	*2015. 02	A	15	2. 26	8. 38	2-3	
2670. 237	A	40	2. 21	6. 83	4-3		2020. 83	A	15	2. 26	8. 36	1-2	
2659. 60	A	25	2. 21	6. 85	4-5	a ¹ G -y ¹ H° (112)	2017. 46	A	2	2. 27	8. 38	3-3	
							2021. 83	A	5	2. 26	8. 36	2-2	
Vac							Vac						
2155. 61	A	15	2. 21	7. 94	4-5	a ¹ G -y ¹ F° (113)	1976. 62	A	60	2. 27	8. 51	3-3	a ³ D -u ¹ D° (127)
2087. 92	A	20	2. 21	8. 12	4-4	a ¹ G -z ¹ G° (114)	1980. 04	A	40	2. 26	8. 49	2-2	
2065. 76	A	40	2. 21	8. 19	4-3	a ¹ G -z ¹ F° (115)	1980. 59	A	25	2. 26	8. 49	1-1	
Vac							1982. 41	A	8	2. 27	8. 49	3-2	
1885. 90	A	10	2. 21	8. 76	4-5	a ¹ G -z ¹ H° (116)	1981. 53	A	8	2. 26	8. 49	2-1	
1838. 86	A	25	2. 21	8. 92	4-4	a ¹ G -w ¹ G° (117)	1739. 33	A	10l	2. 27	9. 36	3-3?	a ³ D -t ¹ D° (128)
							1722. 62	A	10e	2. 27	9. 43	3-3	a ³ D - ² ⁰ (129)
							Air						
*2914. 298	A	40	2. 27	6. 50	3-4	a ³ D -z ¹ F° (118)	2960. 777	A	6	2. 36	6. 53	4-5	b ¹ G -z ¹ I° (130)
2931. 859	A	10	2. 26	6. 47	2-3		2871. 543	A	3	2. 36	6. 66	4-3	b ¹ G -w ¹ D° (131)
2942. 37	A	15	2. 26	6. 45	1-2		2853. 761	A	4	2. 36	6. 68	4-4	b ¹ G -y ¹ G° (132)
m2944. 49	P	V II	2. 26	6. 45	2-2		2774. 718	A	60	2. 36	6. 81	4-3	b ¹ G -y ¹ F° (133)
2904. 985	A	15	2. 27	6. 51	3-3	a ³ D -z ¹ D° (119)	2769. 731	A	20	2. 36	6. 82	4-5	b ¹ G -x ¹ G° (134)
2905. 809	A	15	2. 26	6. 51	2-2		2758. 810	A	15	2. 36	6. 83	4-3	
2911. 654	A	7	2. 26	6. 49	1-1		*2747. 462	A	80	2. 36	6. 85	4-5	b ¹ G -y ¹ H° (135)
2913. 716	A	2	2. 26	6. 49	2-1								
2899. 936	A	4	2. 26	6. 51	2-3								
2903. 548	A	3	2. 26	6. 51	1-2								
2810. 272	A	100	2. 27	6. 66	3-3	a ³ D -w ¹ D° (120)	2141. 70	A	4h?	2. 36	8. 12	4-4	b ¹ G -z ¹ G° (136)
2810. 158	A	60	2. 26	6. 65	2-2								
2817. 506	A	60	2. 26	6. 64	1-1								
2814. 903	A	15	2. 27	6. 65	3-2								
2819. 444	A	20	2. 26	6. 64	2-1								
2805. 544	A	30	2. 26	6. 66	2-3								
2808. 237	A	25	2. 26	6. 65	1-2								
2717. 464	A	5	2. 27	6. 81	3-3	a ³ D -y ¹ F° (121)	Vac						
							1978. 96	A	20	2. 36	8. 60	4-3	b ¹ G -v ¹ G° (138)
*2560. 149	A	4	2. 26	7. 08	2-2	a ³ D -y ¹ D° (122)	1929. 61	A	60	2. 36	8. 76	4-5	b ¹ G -z ¹ H° (139)
2281. 235	A	60	2. 27	7. 68	3-4	a ³ D -w ¹ F° (123)	1880. 43	A	40e?	2. 36	8. 92	4-4	b ¹ G -w ¹ G° (140)
2280. 338	A	60	2. 26	7. 67	2-3								
*2281. 601	A	60	2. 26	7. 66	1-2								
2283. 469	A	7	2. 27	7. 67	3-3								
2282. 863	A	6	2. 26	7. 66	2-2								
							Air						
							2971. 998	A	4	2. 37	6. 52	1-1	b ³ P -z ¹ P° (141)
							2971. 571	A	8	2. 37	6. 52	0-1	
2161. 48	A	20	2. 27	7. 98	3-3	a ³ D -v ¹ D° (124)	2873. 180	A	30	2. 36	6. 66	2-3	
2149. 386	A	8	2. 26	8. 00	2-2		2880. 802	A	15	2. 37	6. 65	1-2	b ³ P -w ¹ D°† (142)
2142. 40	A	3	2. 26	8. 02	1-1		2890. 144	A	7	2. 37	6. 64	0-1	
2107. 40	A	10h	2. 27	8. 12	3-4	a ³ D -z ¹ G° (125)	2878. 028	A	7	2. 36	6. 65	2-2	
							2890. 553	A	5	2. 37	6. 64	1-1	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2809. 513	A	15	2. 36	6. 75	2-2	b $^3P - x \ ^3P^o$ (143)	2864. 517	A	30	2. 50	6. 81	4-3	b $^3H - y \ ^3F^o$ (158)
2811. 982	A	5	2. 37	6. 75	1-1		2869. 131	A	150	2. 51	6. 82	6-5	b $^3H - z \ ^3G^o$ (159)
2804. 443	A	4	2. 37	6. 77	1-0		2854. 335	A	120	2. 50	6. 83	5-4	
2812. 184	A	6	2. 37	6. 75	1-2		2847. 573	A	100	2. 50	6. 83	4-3	
2811. 597	A	7	2. 37	6. 75	0-1		2862. 310	A	20	2. 50	6. 82	5-5	
2776. 24	A	6H	2. 36	6. 81	2-3	b $^3P - y \ ^1F^o$ (144)	2851. 260	A	15	2. 50	6. 83	4-4	
2198. 524	A	20	2. 36	7. 98	2-3	b $^3P - v \ ^3D^o$ (145)	2845. 241	A	50	2. 51	6. 85	6-5	b $^3H - y \ ^1H^o$ (160)
2190. 48	A	8	2. 37	8. 00	1-2		2838. 531	A	4	2. 50	6. 85	5-5	
2184. 17	A	5	2. 37	8. 02	0-1		2835. 47	A	4	2. 50	6. 85	4-5	
*2049. 67	A	5h	2. 36	8. 38	2-3?	b $^3P - v \ ^3F^o$ (146)	2278. 972	A	40	2. 51	7. 93	6-5	b $^3H - w \ ^3G^o$ (161)
2006. 88	A	80	2. 36	8. 51	2-3	b $^3P - u \ ^3D^o$ (147)	2279. 762	A	20	2. 50	7. 92	5-4	
*2014. 18	A	90	2. 37	8. 49	1-2		*2281. 601	A	60	2. 50	7. 91	4-3	
2015. 56	A	20	2. 37	8. 49	0-1		2004. 77	A	90	2. 51	8. 67	6-5	b $^3H - v \ ^3G^o$ (162)
2012. 8	A	20	2. 36	8. 49	2-2		*2014. 18	A	90	2. 50	8. 63	5-4	
*2015. 74	A	20	2. 37	8. 49	1-1		2023. 56	A	50	2. 50	8. 60	4-3	
							2001. 43	A	10	2. 50	8. 67	5-5	
							*2012. 64	A	10	2. 50	8. 63	4-4	
2775. 770	A	70	2. 37	6. 82	6-5	a $^1I - x \ ^3G^o$ (148)	Vac						
2760. 710	A	60	2. 37	6. 84	6-6	a $^1I - z \ ^1I^o$ (149)	1972. 62	A	20	2. 50	8. 76	4-5	b $^3H - z \ ^1H^o$ (163)
2753. 407	A	150	2. 37	6. 85	6-5	a $^1I - y \ ^1H^o$ (150)	1921. 24	A	15he?	2. 50	8. 92	4-4	b $^3H - w \ ^1G^o$ (164)
							*1780. 52	A	5h	2. 50	9. 43	4-3	b $^3H - z \ ^2o$ (165)
2871. 463	A	4	2. 46	6. 75	0-1	a $^1S - x \ ^3P^o$ (151)	Air						
2756. 38	A	4h	2. 46	6. 93	0-1	a $^1S - y \ ^1P^o$ (152)	2932. 323	A	60	2. 55	6. 75	3-2	b $^3D - z \ ^3Po$ (166)
							2931. 624	A	20	2. 55	6. 75	2-1	
							2915. 330	A	30	2. 53	6. 77	1-0	
							2895. 609	A	4	2. 55	6. 81	2-3	b $^3D - y \ ^1F^o$ (167)
2976. 72	P		2. 51	6. 66	2-3	c $^3P - w \ ^3D^o$ (153)	2878. 299	A	3	2. 55	6. 83	2-3	b $^3D - z \ ^1H^o$ (168)
2959. 55	A	1	2. 48	6. 65	1-2		2852. 540	A	30	2. 55	6. 87	2-1	b $^3D - y \ ^3S^o$ (169)
2981. 924	A	15	2. 51	6. 65	2-2		2844. 833	A	3	2. 53	6. 87	1-1	
2969. 846	A	5	2. 48	6. 64	1-1		2273. 616	A	9	2. 55	7. 97	2-2	b $^3D - z \ ^1D^o$ (170)
2992. 378	A	2	2. 51	6. 64	2-1		*2273. 024	A	40h	2. 55	7. 98	3-3	b $^3D - v \ ^3D^o$ (171)
2908. 44	A	20	2. 51	6. 75	2-2	c $^3P - x \ ^3P^o$ (154)	2262. 404	A	9h	2. 55	8. 00	2-2	
2886. 967	A	10	2. 48	6. 75	1-1		2251. 114	A	6	2. 53	8. 02	1-1	
2879. 013	A	2	2. 48	6. 77	1-0		2103. 53	A	30	2. 55	8. 41	3-4	b $^3D - v \ ^3F^o$ (172)
2887. 158	A	8	2. 48	6. 75	1-2		2114. 03	A	30	2. 55	8. 38	2-3	
m2892. 57	P	V II	2. 49	6. 75	0-1		2117. 293	A	25	2. 53	8. 36	1-2	
							2114. 30	A	15	2. 55	8. 38	3-3	
							2121. 54	A	10	2. 55	8. 36	2-2	
2830. 402	A	40	2. 51	6. 87	2-1	c $^3P - y \ ^3S^o$ (155)	2068. 80	A	60	2. 55	8. 51	3-3	b $^3D - u \ ^3D^o$ (173)
m2810. 24	P	V II	2. 48	6. 87	1-1		2074. 87	A	25	2. 55	8. 49	2-2	
2815. 547	A	3	2. 49	6. 87	0-1		2072. 43	A	30	2. 53	8. 49	1-1	
							2075. 13	A	15	2. 55	8. 49	3-2	
2101. 86	A	20	2. 51	8. 38	2-3	c $^3P - v \ ^3F^o$ (156)	2076. 52	A	0?	2. 55	8. 49	2-1	
2098. 00	A	5d?	2. 48	8. 36	1-2?		2068. 54	A	15	2. 55	8. 51	2-3	
2109. 27	A	8	2. 51	8. 36	2-2		2070. 79	A	15	2. 53	8. 49	1-2	
*2056. 89	A	15	2. 51	8. 51	2-3	c $^3P - u \ ^3D^o$ (157)							
2052. 38	A	10	2. 48	8. 49	1-2								
*2056. 89	A	15	2. 49	8. 49	0-1								
2063. 12	A	20	2. 51	8. 49	2-2								

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1814. 93	A	5	2.55	9.35	2-1	b ¹ D - _t ¹ D°† (174)	Air 2566. 602	A	15	3.31	8.12	3-4	a ¹ F - _x ¹ G° (193)
1785. 07	A	5	2.55	9.46	3-4	b ¹ D - _u ¹ F°† (175)	2090. 33	A	25	3.31	9.22	3-3	a ¹ F - _w ¹ F° (194)
1793. 13	A	3	2.55	9.43	2-3		Vac 1924. 87	A	30	3.31	9.73	3-2	a ¹ F - _w ¹ D° (195)
1792. 49	A	5	2.55	9.43	2-3	b ¹ D - ₂ ⁰ (176)	Air 2948. 076	A	60	3.74	7.93	4-5	c ¹ F - _w ¹ G° (196)
Air 2926. 442	A	40	2.59	6.81	2-3	a ¹ D - _y ¹ F° (177)	2955. 584	A	30	3.74	7.92	3-4	
2840. 825	A	3	2.59	6.93	2-1	a ¹ D - _y ¹ P° (178)	2958. 61	A	20	3.74	7.91	2-3	
*2292. 588	A	30	2.59	7.97	2-2	a ¹ D - _x ¹ D° (179)	2956. 645	A	2	3.74	7.92	4-4	
2130. 42	A	5	2.59	8.38	2- _s	a ¹ D - _v ¹ F° (180)	2962. 014	A	5	3.74	7.91	3-3	
Vac							*2750. 29	A	8H	3.74	8.23	4-3?	c ¹ F - _y ¹ G° (198)
1862. 76	A	25	2.59	9.22	2-3	a ¹ D - _w ¹ F° (181)	*2782. 95	A	6H	3.74	8.18	3-2?	
1729. 78	A	10e	2.59	9.73	2-2	a ¹ D - _w ¹ D° (182)	2642. 72	A	6	3.74	8.41	4-4	c ¹ F - _v ¹ F° (199)
							2668. 01	A	10H	3.74	8.36	2-2	
							2588. 128	A	3	3.74	8.51	4-3	c ¹ F - _u ¹ D° (200)
							*2597. 21	A	6h	{ 3.74	8.49	3-2	
										{ 3.74	8.49	2-1	
Air 2949. 172	A	40	2.75	6.93	1-1	a ¹ P - _y ¹ P° (183)	2195. 69	A	15	3.74	9.36	4-3	c ¹ F - _t ¹ D°† (201)
2850. 685	A	25	2.75	7.08	1-2	a ¹ P - _y ¹ D° (184)	2199. 443	A	10	3.74	9.35	3-2	
2362. 632	A	20	2.75	7.97	1-2	a ¹ P - _x ¹ D° (185)	2199. 660	A	7	3.74	9.35	2-1?	
							2170. 05	A	10H	3.74	9.43	4-3	c ¹ F - _u ¹ F° (202)
							2167. 69	A	8	3.74	9.43	2-3	
							2051. 79	A	30h	3.74	9.76	4-3	c ¹ F - ₃ ³ (203)
							2051. 27	A	5h	3.74	9.76	3-3	
							*2049. 67	A	5h	3.74	9.76	2-3	
2539. 20	A	20H1	2.89	7.75	5-4	a ¹ H - ₁ ⁰ (186)	m2941. 22	P	V II	3.78	7.98	4-3	d ¹ F - _v ¹ D° (204)
2357. 810	A	60	2.89	8.12	5-4	a ¹ H - _x ¹ G° (187)	2926. 35	A	10h	3.78	8.00	3-2	
*2044. 28§	A	5	2.89	8.92	5-4	a ¹ H - _w ¹ G° (188)	2918. 21	A	15h	3.79	8.02	2-1	
							2943. 631	A	3	3.78	7.98	3-3	
							2929. 017	A	4	3.79	8.00	2-2	
							*2844. 22	A	4H1	3.78	8.12	3-4	d ¹ F - _x ¹ G° (205)
							*2750. 29	A	8H1	3.78	8.27	4-4?	d ¹ F - _y ¹ D°† (206)
2537. 619	A	20	3.11	7.97	2-2	b ¹ D - _x ¹ D° (189)	2663. 526	A	4h	3.78	8.41	4-4	d ¹ F - _v ¹ F°† (207)
2431. 59	A	4	3.11	8.19	2-3	b ¹ D - _x ¹ F° (190)	m2682. 81	P	V II	3.78	8.38	3-3	
							2697. 201	A	10	3.79	8.36	2-2	
							2210. 029	A	10	3.78	9.36	4-3	d ¹ F - _t ¹ D° (208)
							2215. 786	A	9h	3.78	9.35	3-2	
							2219. 408	A	3	3.79	9.35	2-1?	
							2211. 38	A	2h?	3.78	9.36	3-3	
							*2217. 32	A	8	3.79	9.35	2-2	
*2782. 95	A	6H	3.31	7.75	3-4	a ¹ F - ₁ ⁰ (191)	2171. 840	A	25	3.78	9.46	4-4	d ¹ F - _u ¹ F°† (209)
2648. 475	A	30	3.31	7.97	3-2	a ¹ F - _x ¹ D° (192)	*2185. 39	A	50	3.78	9.43	3-3	
							2194. 84	A	8	3.79	9.41	2-2	

V II—Continued

V II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air 2185. 96	A	40	3.79	9.43	2-3	d ³ F — 2° (210)	*2795. 39 2792. 45 *2787. 00	A	3H 6H 10H	4.56 4.59 4.56	8.97 9.01 8.99	3-2? 4-4? 3-3?	^z ³ F° — e ³ D (217)
2077. 58	A	15H	3.79	9.73	2-2	d ³ F — w ¹ D° (211)	*2765. 676 2756. 58 2749. 48 2740. 98 2736. 12 2772. 01	A	150+H 20H 8H 7H 4H 60H	4.61 4.59 4.56 4.53 4.50 4.61	9.07 9.06 9.05 9.03 9.02 9.06	5-6 4-5 3-4 2-3 1-2 5-5	^z ³ F° — e ³ G (218)
2066. 83	A	8h	3.79	9.76	2-3	d ³ F — 3° (212)	2767. 10 2759. 60 2749. 97	A	30H 15H 7H	4.59 4.56 4.53	9.05 9.03 9.02	4-4 3-3 2-2	
2663. 25	A	250H	4.38	9.01	6-7	^z ³ G° — e ³ H (213)	2781. 48 2771. 41 *2787. 00	A	100H 40H 10H	4.61 4.59 4.61	9.05 9.04 9.04	5-5? 4-4 5-4	^z ³ F° — e ³ F (219)
2655. 68	A	200H	4.34	8.99	5-6								
2649. 37	A	150H	4.31	8.97	4-5								
2644. 363	A	100H	4.29	8.96	3-4								
2640. 86	A	80H	4.27	8.94	2-3								
2676. 33	A	7H	4.38	8.99	6-6								
2666. 79	A	10H	4.34	8.97	5-5								
2658. 49	A	7H	4.31	8.96	4-4								
2651. 57	A	5H	4.29	8.94	3-3								
2676. 05	A	9H	4.34	8.96	5-4								
							2800. 05 2818. 52	A	4H 5H	4.59 4.59	9.00 8.97	3-3 3-2	^z ³ D° — e ³ P (220)
2636. 00	A	5H	4.27	8.95	2-1?	^z ³ G° — e ³ P (214)							
2616. 66	A	10H	4.29	9.01	3-4?	^z ³ G° — e ³ D (215)	2825. 86 2843. 82 *2844. 22	A	50H 9H 4H	4.63 4.63 4.61	9.00 8.97 8.95	4-3 3-2 2-1	^z ³ D° — e ³ P (221)
2629. 72	A	60H	4.38	9.07	6-6	^z ³ G° — e ³ G (216)	2825. 02 2831. 60 *2835. 35 2830. 70	A	5H 10H 6H 3H	4.63 4.61 4.60 4.59	9.00 8.97 8.95 8.95	3-3 2-2 1-1 0-1	
2615. 40	A	40H	4.34	9.06	5-5								
2608. 00	A	20H	4.31	9.05	4-4								
2603. 40	A	15H	4.29	9.03	3-3								
2601. 08	A	25H	4.27	9.02	2-2								
2635. 43	A	7H	4.38	9.06	6-5								
2624. 860	A	15H	4.34	9.05	5-4								
2617. 10	A	9H	4.31	9.03	4±3								
2611. 51	A	7H	4.29	9.02	3-2								
*2609. 80	A	5	4.34	9.07	5-6								
2598. 65	A	2H	4.31	9.06	4-5								
2594. 43	A	3h	4.29	9.05	3-4								
m2593. 05	P	V III	4.27	9.03	2-3								
							*2795. 39 2800. 95	A	3H 20H	4.63 4.63	9.05 9.04	4-5? 4-4	^z ³ D° — e ³ F (224)

Strongest Unclassified Lines of V II

2912. 50	A	10H					2612. 26	A	15H				
2822. 15	A	20H					2611. 24	A	10H				
2794. 83	A	15H					2610. 61	A	30H				
2791. 63	A	10H					2602. 94	A	15H				
2787. 95	A	20h					2567. 45	A	15H				
2784. 25	A	60H					2554. 22	A	15H				
2783. 94	A	30H					2554. 06	A	10H				
2778. 60	A	80H					2542. 46	A	20H				
2755. 05	A	10H					2450. 236	A	10h				
2752. 11	A	15H					2438. 039	A	10h				
2751. 79	A	10H					2400. 892	A	40h				
2734. 27	A	15H					2390. 470	A	15h				
2732. 17	A	10H					2382. 032	A	60+ Fe?				
2723. 455	A	10					2372. 168	A	15H				
2714. 42	A	10H					2330. 144	A	12				
2712. 21	A	30H					2283. 766	A	40				
2696. 51	A	20H					2261. 850	A	10h				
2694. 65	A	10H					2170. 38	A	15				
2684. 78	A	15H					2166. 15	A	20h				
2673. 25	A	50H					2164. 38	A	15				
2661. 47	A	30H					2163. 68	A	20h				
2652. 76	A	20H					2151. 812	A	50				
2628. 75	A	30H					2151. 032	A	50				
2622. 74	A	50H					2150. 835	A	60				
2621. 80	A	40H					2133. 04	A	60				

Strongest Unclassified Lines of V II—Continued

I A	Ref	Int	I A	Ref	Int	I A	Ref	Int	I A	Ref	Int
Air			Air			Air			Vac		
2126.585	A	25h	2061.56	A	15	2022.66	A	15h	1867.47	A	20
2119.562	A	15	2054.85	A	70	2021.38	A	10h	1828.84	A	50
2119.15	A	40h	2048.75	A	15	2005.88	A	15	1823.61	A	25
2118.84	A	25	2037.83	A	50	2001.65	A	40	1816.30	A	20h
2111.04	A	15	2037.50	A	25	2001.14	A	30	1796.80	A	20
2087.54	A	15	2035.78	A	15	2000.14	A	10h	1794.62	A	50
						Vac					
2079.29	A	10H	2035.06	A	60	1992.80	A	30	1788.30	A	25
2077.79	A	40H	2033.50	A	10	1984.05	A	90	1760.11	A	25
2076.87	A	60h	2031.40	A	30h	1933.97	A	30	1757.76	A	20
2062.00	A	10	2028.88	A	15	1919.35	A	20	1661.27	A	60

V III

IP 29.6 Anal C List C Nov. 1948

REFERENCE

A H. E. White, Phys. Rev. 33, 672 (1929). W L, I, T

V III

V III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1159.77	A	50	0.07	10.72	4½-5½	a 4F - z 4G°†	1331.94	A	50	2.10	11.36	5½-4½	a 2H - z 2G°†
1163.27	A	30	0.04	10.65	3½-4½	(1)	1331.09	A	45	2.08	11.32	4½-3½	(9)
1166.47	A	30	0.02	10.60	2½-3½								
1169.28	A	20	0.00	10.56	1½-2½								
1166.58	A	30	0.07	10.65	4½-4½								
1149.94	A	100	0.07	10.81	4½-4½	a 4F - z 4F°†	2371.04	A	200	5.51	10.72	4½-5½	b 4F - z 4G°†
1151.04	A	90	0.04	10.77	3½-3½	(2)	2382.45	A	150	5.47	10.65	3½-4½	(10)
1152.18	A	80	0.02	10.73	2½-2½		2393.54	A	125	5.45	10.60	2½-3½	
1153.19	A	70	0.00	10.71	1½-1½		2404.16	A	100	5.42	10.56	1½-2½	
1154.24	A	70	0.07	10.77	4½-3½		2399.67	A	75	5.51	10.65	4½-4½	
1125.71	A	30	0.07	11.04	4½-3½	a 4F - z 4D°†	2407.17	A	80	5.47	10.60	3½-3½	
1122.11	A	15	0.04	11.04	3½-2½	(3)	2413.89	A	40	5.45	10.56	2½-2½	
1123.00	A	15	0.02	11.01	2½-1½								
1123.55	A	15	0.00	10.99	1½-½								
1289.42	A	30	1.41	10.98	1½-2½	a 2P - z 2D°†	2330.37	A	100	5.51	10.81	4½-4½	b 4F - z 4F°
*1292.77	A	20	1.38	10.93	½-1½	(4)	2331.67	A	75	5.47	10.77	3½-3½	(11)
							2334.15	A	75	5.45	10.73	2½-2½	
							2337.08	A	75	5.42	10.71	1½-1½	
							2348.22	A	30	5.51	10.77	4½-3½	
							2347.06	A	30	5.47	10.73	3½-2½	
							2346.28	A	30	5.45	10.71	2½-1½	
							2314.10	A	50	5.47	10.81	3½-4½	
							2318.94	A	40	5.45	10.77	2½-3½	
							2325.07	A	40	5.42	10.73	1½-2½	
1287.88	A	20	1.45	11.04	2½-3½	a 4P - z 4D°†	2232.76	A	70	5.51	11.04	4½-3½	b 4F - z 4D°†
1284.23	A	15	1.43	11.04	1½-2½	(5)	2215.86	A	40	5.47	11.04	3½-2½	(12)
							2217.40	A	30	5.45	11.01	2½-1½	
							2218.35	A	30	5.42	10.99	1½-½	
							2217.80	A	25	5.47	11.04	3½-3½	
1313.31	A	30	1.50	10.90	4½-3½	a 2G - z 2F°†	2204.31	A	20	5.45	11.04	2½-2½	
1317.25	A	20	1.48	10.85	3½-2½	(6)							
1252.12	A	40	1.50	11.36	4½-4½	a 2G - z 2G°†							
1253.99	A	30	1.48	11.32	3½-3½	(7)	2595.11	A	170	6.15	10.90	3½-3½	b 2F - z 2F°†
							2593.07	A	160	6.09	10.85	2½-2½	(13)
1389.79	A	20	2.02	10.90	2½-3½	a 2D - z 2F°†	2554.23	A	160	6.15	10.98	3½-2½	b 2F - z 2D°†
						(8)	2548.22	A	150	6.09	10.93	2½-1½	(14)
							2366.27	A	180	6.15	11.36	3½-4½	b 2F - z 2G°†
							2358.70	A	180	6.09	11.32	2½-3½	(15)

V IV

I P 48 Anal C List C April 1949

REFERENCES

- A H. E. White, Phys. Rev. 33, 538 (1929). W L, I, T
 B. Edlén, unpublished material (Feb. 1949). T

V IV

V IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
*684.38	A	80	0.09	18.13	4-3	$a^3F - z^3D^o \dagger$	1939.07	A	100	11.95	18.32	3-4	$a^3D - z^3F^o \dagger$
684.44	A	50	0.04	18.08	3-2	(1)	1951.48	A	80	11.90	18.23	2-3	(6)
*684.38	A	80	0.00	18.04	2-1		1963.13	A	70	11.88	18.16	1-2	
677.35	A	50	0.09	18.32	4-4	$a^3F - z^3F^o \dagger$	1825.85	A	50	11.95	18.71	3-2	$a^3D - z^3P^o \dagger$
678.72	A	35	0.04	18.23	3-3	(2)	1817.72	A	30	11.90	18.69	2-1	(7)
679.65	A	25	0.00	18.16	2-2		1809.88	A	15	11.88	18.70	1-0	
750.10	A	30	1.44	17.90	2-2	$a^1D - z^1D^o$	Air						$b^1D - z^1D^o$
						(3)	2268.30	A	100	12.46	17.90	2-2	(8)
737.84	A	100	2.36	19.09	4-3	$a^1G - z^1F^o$	Vac						$b^1D - z^1F^o$
						(4)	1861.56	A	60	12.46	19.09	2-3	(9)
							1806.22	A	40	12.46	19.29	2-1	$b^1D - z^1P^o$
1997.74	A	80	11.95	18.13	3-3	$a^3D - z^3D^o$							(10)
1999.32	A	60	11.90	18.08	2-2	(5)							
Air													
2002.47	A	50	11.88	18.04	1-1								
2014.18	A	50	11.95	18.08	3-2								
2011.15	A	25	11.90	18.04	2-1								
Vac													
1982.49	A	30	11.90	18.13	2-3								
1990.75	A	30	11.88	18.08	1-2								

O

UNITED STATES DEPARTMENT OF COMMERCE, Charles Sawyer, Secretary

NATIONAL BUREAU OF STANDARDS, A. V. Astin, Director

AN ULTRAVIOLET MULTIPLET TABLE

The Spectra of Chromium, Manganese, Iron, Cobalt,
Nickel, Copper, Zinc, Gallium, Germanium, Arsenic,
Selenium, Bromine, Krypton, Rubidium, Strontium,
Yttrium, Zirconium, and Niobium

By CHARLOTTE E. MOORE



Circular of the National Bureau of Standards 488, Section 2

Issued August 15, 1952

Foreword

The present Section of "An Ultraviolet Multiplet Table" is the second of a series being prepared in conjunction with the program on "Atomic Energy Levels," now in progress at the National Bureau of Standards. This Section contains the leading multiplets of 46 spectra of the elements Chromium through Niobium ($Z = 24$ to 41). As before, no attempt has been made to include all spectra in this range that have been analyzed, or all classified lines of the spectra that are included.

As each Volume of "Atomic Energy Levels" is completed, a corresponding Section of this Table is being published for the same elements. Volume II of "Atomic Energy Levels," covering the elements Cr to Nb, is now in press.

The arrangement of the present Table is identical with that of Section 1. When the Ultraviolet Multiplets have been tabulated for elements throughout the periodic table, a Finding List will be published containing all of the lines arranged in order of wavelength. For each line the spectrum and Multiplet Number will be indicated.

This program, initiated while Dr. E. U. Condon was Director of the Bureau, is under the direction of Dr. W. F. Meggers, Chief of the Spectroscopy Section of the Division of Atomic and Radiation Physics. Their interest and counsel, as well as the cordial collaboration of many spectroscopists in other laboratories, are gratefully acknowledged by Dr. Moore and the Bureau.

A. V. ASTIN, *Director.*

WASHINGTON, D. C., June 30, 1952.

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		Cr IV.....	21			As II.....	92
Manganese	25	Mn I.....	22	Selenium	34	Se I.....	93
		Mn II.....	24			Se II.....	94
		Mn III.....	29	Bromine	35	Br I.....	95
Iron	26	Fe I.....	31			Br II.....	96
		Fe II.....	39	Krypton	36	Kr I.....	97
		Fe III.....	54			Kr II.....	98
Cobalt	27	Co I.....	60	Rubidium	37	Rb I.....	99
		Co II.....	65			Rb II.....	99
		Co III.....	67	Strontium	38	Sr I.....	100
Nickel	28	Ni I.....	70			Sr II.....	101
		Ni II.....	73	Yttrium	39	Y I.....	102
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Copper	29	Cu I.....	78			Y III.....	103
		Cu II.....	80	Zirconium	40	Zr I.....	104
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1. Arrangement

The present work is a continuation of the ultraviolet extension of the writer's "Revised Multiplet Table,"¹ which has the short-wave limit of about 3000 Å. The general plan and the arrangement of this Section are identical with those of Section 1,² and need not be described in detail here. A few comments are, however, in order. In addition to the letters W L, I, and T that follow the references for each spectrum, to denote the sources used for wavelength, intensity, and analysis,

respectively, the letters I P are here introduced to indicate references from which ionization potentials are taken.

As before, the excitation and ionization potentials have been derived by using the multiplication factor 0.00012345 to convert energy levels and limits in cm⁻¹ to electron volts. Birge's revised conversion factor³ has been adopted for the calculation of the ionization potentials in "Atomic Energy Levels,"⁴ which explains the discordance in the two publications.

2. Symbols

The symbols have, in general, the same meaning as in Section 1. They are as follows:

* preceding the wavelength denotes that the line is a blend. If no symbol follows the wavelength, the line is blended with another in the same spectrum. If the intensity is that of a blend, this is also indicated by an asterisk in the intensity column.

§ follows a wavelength (an asterisk always preceding) to denote that a line in the first spectrum of a given element is blended with one in the second spectrum of that element. It has also been used in Fe III to denote a blend of Fe II and Fe III.

§§, ** special symbols following the wavelength (an asterisk always preceding) used for blends not covered

by the above symbols. They are explained in notes entered below the references for a given spectrum.

† follows the wavelength of the *raie ultime* for first and second spectra as given in the papers by Meggers⁵ on the strongest lines of spectra of neutral and singly ionized atoms.

† follows the multiplet designation to call attention to the fact that not all the observed lines belonging to the multiplet are listed here.

m precedes the wavelength when the line is masked. The predicted position of the line is given, as indicated by the letter P in the reference column, and the masking spectrum is indicated in the intensity column.

£ used for Co I in column three to indicate that the line may be due to Co II.

3. Acknowledgments

One of the most rewarding aspects of this work comes from the generous and cordial collaboration at home and abroad that the writer has experienced ever since the programs were initiated in 1946. At this Bureau W. F. Meggers and C. C. Kiess have furnished a wealth of valuable data (W. F. M., Co II, Ni II; C. C. K., Cr I, Br II, Zr III). They have also taken a genuine interest in the work and constantly given helpful and expert advice on many questions. E. U. Condon also generously supported this project during his tenure as Director.

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One of the most enthusiastic contributors is M. A. Catalán of the University of Madrid. During his recent

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¹ C. E. Moore, Contr. Princeton Univ. Observatory No. 20 (1945).
² C. E. Moore, Circ. Nat. Bur. Std. 488, Section 1 (1950).

³ R. T. Birge, Rev. Mod. Phys. 13, No. 4, 237 (1941); Report on Progress in Physics 8, 131 (1941).

⁴ C. E. Moore, Circ. Nat. Bur. Std. 467, Vol. I (1949), Vol. II (1952).

⁵ W. F. Meggers, J. Opt. Soc. Amer. 31, 44 (1941); 31, 606 (1941).

CHROMIUM, Z=24

Cr I

IP 6.74 Anal A List B August 1951

REFERENCE

A C. C. Kiess, unpublished material (1951). IP, W L, I, T

Cr I

Cr I

IA	Ref	Int	E P		J	Multiplet (No.)	IA	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air							Air						
2364.73	A	150r	0.00	5.22	3-4	a "S-x "P°	2986.466	A	50r	1.03	5.16	4-4	a "D-y "D° (11)
2365.91	A	125r	0.00	5.22	3-3	(1)	2986.01	A	25r	1.00	5.13	3-3	
2366.81	A	100r	0.00	5.21	3-2		2985.849	A	20	0.98	5.11	2-2	
							2986.13	A	15	0.96	5.10	1-1	
							2986.13	A	40r	1.03	5.13	4-3	
2094.93	A	10	0.00	5.89	3-4	a "S-w "P°	3005.06	A	50r	1.00	5.11	3-2	
2095.39	A	10	0.00	5.89	3-3	(2)	3000.88	A	40r	0.98	5.10	2-1	
2095.88	A	10	0.00	5.89	3-2		2996.571	A	30r	0.96	5.09	1-0	
							2991.877	A	15	1.00	5.16	3-4	
							2967.64	A	25r	0.98	5.13	2-3	
							2971.102	A	30r	0.96	5.11	1-2	
							2975.478	A	25r	0.96	5.10	0-1	
2984.82	A	3	0.94	5.07	2-3	a "S-y "F°	2980.784	A	25r	0.96	5.26	4-4	a "D-x "D° (12)
2995.094	A	30r	0.94	5.06	2-2	(3)		2889.294	A	25	1.03	5.30	3-3
							2893.254	A	30	1.00	5.26	2-2	
2988.638	A	40r	0.94	5.07	2-3	a "S-x "P°	2896.756	A	25	0.98	5.24	1-1	
2994.06	A	25	0.94	5.06	2-2	(4)	2899.203	A	22	0.96	5.22	4-3	
2998.783	A	40	0.94	5.05	2-1		2911.148	A	22	1.03	5.26	3-2	
							2910.892	A	25	1.00	5.24	2-1	
							2909.049	A	30b	0.98	5.22	1-0	
2941.874	A	10	0.94	5.13	2-3	a "S-y "D°	2905.477	A	25	0.96	5.21	3-4	
2956.328	A	15	0.94	5.11	2-2	(5)	2871.628	A	22	1.00	5.30	2-3	
2966.85	A	7Fe?	0.94	5.10	2-1		2879.27	A	22	0.98	5.26	1-2	
2813.552	A	4	0.94	5.32	2-2	a "S-z "S°	2886.995	A	25	0.96	5.24	0-1	
						(6)	2894.168	A	20	0.96	5.22	a "D-z "G° (13)	
							2916.16	A	12	1.03	5.26	4-5	
2726.496	A	75r	0.94	5.46	2-3	a "S-w "P°	2900.25	A	12	1.00	5.25	3-4	
2731.895	A	65r	0.94	5.45	2-2	(7)	2888.38	A	7	0.98	5.25	2-3	
2736.463	A	50r	0.94	5.45	2-1		2880.62	A	2	0.96	5.25	1-2	
							2918.24	A	4	1.03	5.25	4-4	
							2902.44	A	4	1.00	5.25	3-3	
							2890.35	A	1	0.98	5.25	2-2	
2664.44	A	7	0.94	5.57	2-3?	a "S-v "P°							a "D-z "S° (14)
2681.46	A	18	0.94	5.54	2-2	(8)	2853.89	A	8	1.00	5.32	3-2	
2696.534	A	20	0.94	5.51	2-1		2840.292	A	7	0.98	5.32	2-2	
							2830.90	A	2	0.96	5.32	1-2	
2544.702	A	12	0.94	5.79	2-3	a "S-u "P°							a "D-w "P° (15)
2538.95	A	12	0.94	5.80	2-2	(9)	2780.605	A	60r	1.03	5.46	4-3	
2535.47	A	10	0.94	5.80	2-1		2769.902	A	50r	1.00	5.45	3-2	
							2761.735	A	40r	0.98	5.45	2-1	
							2764.355	A	35r	1.00	5.46	3-3	
2367.86	A	10	0.94	6.15	2-3	a "S-t "P°	2757.086	A	40r	0.98	5.45	2-2	
2379.95	A	10	0.94	6.12	2-2	(10)	2752.851	A	50r	0.96	5.45	1-1	
2380.46	A	7	0.94	6.12	2-1		2751.58	A	18	0.98	5.46	2-3	
							*2748.275	A	50r	0.96	5.45	1-2	
										0.96	5.45	0-1	

Cr I—Continued

Cr I—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)	
			Low	High						Low	High			
Air							Air							
2755.24	A	8	1.03	5.50	4-5	<i>a</i> $^5D - y$ $^5G^o$ (16)	2591.84	A	50r	1.03	5.79	4-3	<i>a</i> $^6D - u$ $^5P^o$ (24)	
2742.98	A	3	0.98	5.48	2-3		2571.74	A	30r	1.00	5.80	3-2		
2716.177	A	20	1.03	5.57	4-3	<i>a</i> $^5D - v$ $^5P^o$ (17)	*2557.144	A	25	0.98	5.80	2-1		
*2718.07 §	A	7	1.00	5.54	3-2		2577.66	A	20r	1.00	5.79	3-3		
2700.590	A	20	1.00	5.57	3-3		2560.695	A	30	0.98	5.80	2-2		
*2705.724	A	10	0.98	5.54	2-2		2549.548	A	40	0.96	5.80	1-1		
2697.200	A	8	0.96	5.54	1-2		2566.55	A	12	0.98	5.79	2-3		
							2553.064	A	15	0.96	5.80	1-2		
							2545.645	A	12	0.96	5.80	0-1		
2701.990	A	30	1.03	5.59	4-5	<i>a</i> $^5D - x$ $^5F^o$ (18)	2568.52	A	8	1.03	5.83	4-5	<i>a</i> $^5D - x$ $^5G^o$ (25)	
2688.035	A	22	1.00	5.59	3-4		*2557.144	A	25	1.00	5.83	3-4		
2678.15	A	12	0.98	5.59	2-3		2550.364	A	8	0.98	5.82	2-3		
2671.980	A	10	0.96	5.58	1-2		2547.868	A	8	0.96	5.81	1-2		
2669.359	A	12	0.96	5.58	0-1		2571.10	A	4	1.03	5.83	4-4		
2703.48	A	12	1.03	5.59	4-4		2561.33	A	5	1.00	5.82	3-3		
2690.251	A	20	1.00	5.59	3-3									
2680.33	A	9	0.98	5.58	2-2		*2580.04	A	7	1.03	5.81	4-5	<i>a</i> $^5D - y$ $^5G^o$ (26)	
2673.644	A	12	0.96	5.58	1-1		*2566.00	A	10	1.00	5.81	3-4		
*2705.72	A	10	1.03	5.59	4-3		2555.42	A	6b	0.98	5.81	2-3		
2692.441	A	10	1.00	5.58	3-2		*2580.04	A	7	1.03	5.81	4-4		
2682.01	A	10	0.98	5.58	2-1		2566.41	A	1	1.00	5.81	3-3		
							2580.48	A	2	1.03	5.81	4-3		
2656.02	A	4	1.00	5.65	3-2	<i>a</i> $^5D - y$ $^5P^o$ (19)	2552.79	A	10	0.98	5.81	2-1	<i>a</i> $^5D - z$ $^5S^o$ (27)	
*2645.30	A	2	0.98	5.64	2-1		2545.21	A	10	0.96	5.81	1-1		
2636.89	A	4	0.96	5.64	1-0									
2644.23	A	7	0.98	5.65	2-2		2531.76	A	5	1.03	5.90	4-5	<i>a</i> $^5D - x$ $^5H^o$ (28)	
2637.168	A	4	0.96	5.64	1-1		2518.52	A	4	0.98	5.88	2-3		
2636.094	A	5	0.96	5.65	1-2		2538.53	A	2	1.03	5.89	4-4		
2632.987	A	4	0.96	5.64	0-1		2529.20	A	5	1.00	5.88	3-3		
							2542.872	A	3	1.03	5.88	4-3		
2640.056	A	7	1.03	5.70	4-3	<i>a</i> $^5D - y$ $^5D^o$ (20)	2541.359	A	20r	1.03	5.88	4-5	<i>a</i> $^5D - v$ $^5F^o$ (29)	
2629.815	A	12	1.00	5.69	3-2		2528.02	A	15	1.00	5.88	3-4		
2620.480	A	12	0.98	5.69	2-1		2517.57	A	10	0.98	5.88	2-3		
2625.318	A	15	1.00	5.70	3-3		2510.49	A	8	0.96	5.88	1-2		
2618.273	A	15	0.98	5.69	2-2		m2506.84	P	Cr I	0.96	5.88	0-1		
2612.490	A	7	0.96	5.69	1-1		2541.68	A	8	1.03	5.88	4-4		
*2613.82	A	8	0.98	5.70	2-3		2528.25	A	10	1.00	5.88	3-3		
2610.29	A	8	0.96	5.69	1-2		2517.87	A	6	0.98	5.88	2-2		
2608.385	A	10	0.96	5.69	0-1		2510.63	A	6	0.96	5.88	1-1		
							2541.91	A	3	1.03	5.88	4-3		
2622.867	A	18	1.03	5.73	4-4	<i>a</i> $^5D - w$ $^5D^o$ (21)	2528.56	A	8	1.00	5.88	3-2		
2612.009	A	7	1.00	5.72	3-3		2517.99	A	2	0.98	5.88	2-1		
2601.88	A	4	0.98	5.72	2-2			2527.11	A	20r	1.03	5.91	4-4	<i>a</i> $^5D - v$ $^5D^o$ (30)
2626.601	A	15	1.03	5.72	4-3		2516.92	A	20r	1.00	5.90	3-3		
2613.305	A	10	1.00	5.72	3-2		2508.11	A	18	0.98	5.90	2-2		
2605.36	A	7	0.98	5.72	2-1		2501.65	A	10	0.96	5.90	1-1		
2612.202	A	8	0.96	5.69	1-0		2530.44	A	15	1.03	5.90	4-3		
2600.61	A	8	0.98	5.72	2-3		2518.71	A	12	1.00	5.80	3-2		
2594.02	A	8	0.96	5.72	1-2		2508.97	A	15	0.98	5.90	2-1		
2593.41	A	8	0.96	5.72	0-1		2500.66	A	12	0.96	5.90	1-0		
							2513.62	A	15	1.00	5.91	3-4		
2603.56	A	10	1.03	5.77	4-5	<i>a</i> $^5D - w$ $^5F^o$ (22)	2506.33	A	4	0.98	5.90	2-3		
2588.19	A	12	1.00	5.77	3-4		2500.79	A	4	0.96	5.90	1-2		
2579.14	A	12	0.98	5.76	2-3		2497.91	A	10	0.96	5.90	0-1		
2572.15	A	12	0.96	5.76	1-2			2519.51	A	50r	1.03	5.92	4-5	<i>a</i> $^5D - u$ $^5F^o$ (31)
2568.098	A	12	0.96	5.76	0-1			2504.31	A	40r	1.00	5.93	3-4	
2602.50	A	6	1.03	5.77	4-4			2496.30	A	35r	0.98	5.92	2-3	
2590.37	A	2	1.00	5.76	3-3			2492.57	A	30	0.96	5.92	1-2	
2579.90	A	4	0.98	5.76	2-2			2491.35	A	20	0.96	5.91	0-1	
2572.07	A	5	0.96	5.76	1-1			2506.82	A	25	1.00	5.92	3-3	
2604.71	A	3	1.03	5.76	4-3			2499.84	A	15	0.98	5.92	2-2	
								2495.08	A	20	0.96	5.91	1-1	
2584.67	A	10	1.03	5.80	4-5	<i>a</i> $^5D - z$ $^5G^o$ (23)	2520.23	A	6	1.03	5.92	4-3		
2575.89	A	8	1.00	5.79	3-4		2510.37	A	2	1.00	5.92	3-2		
2568.66	A	5	0.98	5.78	2-3									
2590.07	A	5	1.03	5.79	4-4									
2579.77	A	4	1.00	5.78	3-3									

Cr I—Continued

Cr I—Continued

Cr I—Continued

Cr I—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air 2004. 95	A	10	1. 03	7. 18	4-4	$a^4D - s^3F^\circ$ (49)	Air 2795. 818	A	12	2. 99	7. 40	6-7	$a^3H - w^3I^\circ$ (61)
Vac 1995. 71	A	8	1. 00	7. 19	3-3		2790. 28	A	12	2. 97	7. 39	5-6	
Air 2003. 55	A	5	1. 03	7. 19	4-3		*2801. 553	A	3	2. 99	7. 39	6-6	
Vac *1997. 30	A	18	1. 00	7. 18	3-2		2771. 449	A	10	2. 95	7. 41	4-5	$a^3H - x^3H^\circ$ (62)
1997. 10	A	7	1. 00	7. 18	3-4		2742. 165	A	20	2. 99	7. 49	6-7	$a^3H - v^3I^\circ$ (63)
1989. 00	A	5	0. 98	7. 19	2-3?		2741. 078	A	22	2. 97	7. 47	5-6	
Air 2938. 83	A	7b	2. 53	6. 73	6-5	$a^4G - q^3F^\circ$ (50)	2739. 395	A	20	2. 95	7. 46	4-5	
2948. 87	A	6b	2. 53	6. 72	5-4		2748. 58	A	3	2. 97	7. 46	5-5	
2957. 28	A	2bh	2. 53	6. 71	4-3		Air 2702. 519	A	15	2. 99	7. 55	6-6	$a^3H - s^3H^\circ$ (64)
2963. 74	A	4bh	2. 53	6. 70	3-2		2705. 414	A	12	2. 97	7. 53	5-5	
2968. 20	A	2b	2. 53	6. 69	2-1		2706. 531	A	20	2. 95	7. 51	4-4	
2715. 98	A	4b	2. 53	7. 08	6-5	$a^4G - p^3F^\circ$ (51)	2715. 51	A	2	2. 97	7. 51	5-4	
*2722. 98	A	2b	2. 53	7. 07	5-4		2704. 744	A	12	2. 99	7. 55	6-5	$a^3H - r^3G^\circ$ (65)
2732. 95	A	2	2. 53	7. 05	3-2		2697. 01	A	15	2. 97	7. 55	5-4	
2733. 00	A	1h	2. 53	7. 05	2-1		2691. 404	A	12	2. 95	7. 54	4-3	
*2722. 98	A	2b	2. 53	7. 07	4-4		2694. 24	A	2	2. 97	7. 55	5-5	
2428. 89	A	4b	2. 53	7. 61	2-2	$a^4G - 3^3$ (52)	2685. 40	A	4h	2. 95	7. 55	4-5	
2555. 50	A	10	2. 70	7. 53	3-4		2642. 118	A	20	2. 99	7. 66	6-5	$a^3H - q^3G^\circ$ (66)
2565. 21	A	3	2. 70	7. 51	2-3		2632. 06	A	5	2. 97	7. 66	5-5?	
							2627. 847	A	4	2. 95	7. 65	4-4	
2853. 94	A	8	2. 97	7. 30	2-3	$a^3P - u^3D^\circ$ (54)	2583. 02	A	9b	2. 99	7. 77	6-6	$a^3H - r^3H^\circ$ (67)
2828. 167	A	12	2. 90	7. 27	1-2		*2578. 275	A	10b	2. 97	7. 76	5-5	
2811. 169	A	12	2. 86	7. 25	0-1		2574. 68	A	10	2. 95	7. 75	4-4	
2875. 44	A	5	2. 97	7. 27	2-2		2587. 88	A	2	2. 99	7. 76	6-5	
2839. 013	A	8	2. 90	7. 25	1-1		2570. 17	A	1	2. 95	7. 76	4-5	
2886. 65	A	2	2. 97	7. 25	2-1		2564. 47	A	7	2. 99	7. 80	6-6	$a^3H - q^3H^\circ$ (68)
2870. 175	A	10	2. 97	7. 27	2-3	$a^3P - t^3D^\circ$ (55)	2557. 56	A	4	2. 97	7. 80	5-5	
2835. 242	A	7	2. 90	7. 26	1-2		2551. 36	A	2	2. 95	7. 79	4-4	
2799. 743	A	3	2. 86	7. 27	0-1		2505. 00	A	10	2. 95	7. 88	4-4	
2882. 76	A	3	2. 97	7. 26	2-2		2516. 42	A	1	2. 99	7. 89	6-5	$a^3H - p^3H^\circ$ (69)
2777. 664	A	10b	2. 97	7. 42	2-1	$a^3P - x^3S^\circ$ (56)	2502. 89	A	3	2. 97	7. 90	5-6	
2733. 51	A	8	2. 90	7. 42	1-1		2499. 66	A	2	2. 95	7. 89	4-5	
2707. 69	A	7b	2. 86	7. 42	0-1		2381. 36	A	7	2. 99	8. 17	6-5	$a^3H - p^3G^\circ$ (70)
2737. 222	A	8	2. 97	7. 48	2-3	$a^3P - s^3D^\circ$ (57)	2378. 08	A	5	2. 97	8. 16	5-4	
2693. 315	A	8	2. 90	7. 48	1-2		2375. 98	A	7	2. 95	8. 15	4-3	
2689. 82	A	2	2. 90	7. 49	1-1		2371. 18	A	2	2. 95	8. 16	4-4	
2660. 006	A	12	2. 97	7. 61	2-2	$a^3P - 3^3$ (58)	2722. 085	A	10	3. 00	7. 53	4-5?	$b^3D - s^3H^\circ$ (71)
2619. 504	A	8	2. 90	7. 61	1-2		*2938. 03	A	8	3. 07	7. 27	3-2	$a^3G - u^3D^\circ$ (72)
2984. 014	A	7	2. 99	7. 12	6-5	$a^3H - t^3G^\circ$ (59)	*2938. 03	A	8	3. 07	7. 27	4-3	$a^3G - t^3D^\circ$ (73)
2981. 42	A	4	2. 97	7. 11	5-4		2901. 98	A	4	3. 09	7. 34	5-4	$a^3G - r^3F^\circ$ (74)
2973. 26	A	1	2. 95	7. 11	4-3		2896. 064	A	6	3. 07	7. 34	4-3	
2891. 42	A	15	2. 99	7. 26	6-6	$a^3H - t^3H^\circ$ (60)	2895. 675	A	7	3. 07	7. 33	3-2	
2881. 14	A	12	2. 97	7. 25	5-5		2890. 16	A	12	3. 07	7. 34	4-4	
2873. 181	A	12	2. 95	7. 25	4-4		2890. 738	A	10	3. 07	7. 34	3-3	
2883. 30	A	2	2. 97	7. 25	5-4		2884. 83	A	4	3. 07	7. 34	3-4	
2871. 023	A	3	2. 95	7. 25	4-5								

Cr I—Continued

Cr I—Continued

Cr II

IP 16.43 Anal A List B March 1951

REFERENCE

A C. C. Kiess, J. Research Nat. Bur. Std., 47, 385, RP2266 (1951). W L, I, T, I P
 * and §§ = Blend with Fe II

Cr II

Cr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2055. 59	A	200	0. 00	6. 00	2½-3½	a ⁴S -z ⁴P° (1)	2677. 19	A	125	1. 54	6. 15	4½-4½	a ⁴D-z ⁴D° (8)
2061. 54	A	175	0. 00	5. 99	2½-2½		2677. 13	A	100	1. 52	6. 13	3½-3½	
2065. 46	A	150	0. 00	5. 97	2½-1½		2661. 73	A	50	1. 50	6. 14	2½-2½	
2025. 58	A	5	0. 00	6. 09	2½-2½	a ⁴S -z ⁴P° (2)	*2691. 03	A	90	1. 54	6. 13	4½-3½	
2039. 90	A	10	0. 00	6. 05	2½-1½		2672. 83	A	90	1. 52	6. 14	3½-2½	
2013. 65	A	40	0. 00	6. 13	2½-3½	a ⁴S -z ⁴D° (3)	2671. 80	A	80	1. 50	6. 12	2½-1½	
*2011. 13	A	20	0. 00	6. 14	2½-2½		2668. 71	A	70	1. 49	6. 11	1½-0½	
2016. 90	A	7	0. 00	6. 12	2½-1½		2663. 42	A	75	1. 52	6. 15	3½-4½	
Vac							2666. 02	A	80	1. 50	6. 13	2½-3½	
1825. 34	A	3	0. 00	6. 76	2½-3½	a ⁴S -z ⁴D° (4)	2653. 57	A	85	1. 49	6. 14	1½-2½	
1830. 61	A	5	0. 00	6. 74	2½-2½		2658. 59	A	100	1. 48	6. 12	0½-1½	
Air							2534. 33	A	40	1. 54	6. 41	4½-4½	a ⁴D-z ⁴F° (9)
2835. 63†	A	200	1. 54	5. 89	4½-5½	a ⁴D-z ⁴F° (5)	2531. 84	A	25	1. 52	6. 39	3½-3½	
2843. 24	A	100	1. 52	5. 86	3½-4½		2529. 48	A	25	1. 50	6. 38	2½-2½	
2849. 83	A	100	1. 50	5. 83	2½-3½		2527. 57	A	7	1. 49	6. 37	1½-1½	
2855. 67	A	100	1. 49	5. 81	1½-2½		2544. 26	A	15	1. 54	6. 39	4½-3½	
2860. 92	A	85	1. 48	5. 79	0½-1½		2539. 52	A	15	1. 52	6. 38	3½-2½	
2858. 91	A	75	1. 54	5. 86	4½-4½		2534. 96	A	3	1. 50	6. 37	2½-1½	
2862. 57	A	125	1. 52	5. 83	3½-3½		2522. 01	A	4	1. 52	6. 41	3½-4½	
2865. 10	A	150	1. 50	5. 81	2½-2½		2364. 02	A	10	1. 54	6. 76	4½-3½	a ⁴D-z ⁴D°† (10)
2866. 72	A	100	1. 49	5. 79	1½-1½		2353. 29	A	3	1. 52	6. 76	3½-3½	
2867. 65	A	100	1. 48	5. 78	0½-0½		2353. 44	A	3	1. 50	6. 74	2½-2½	
2878. 45	A	50	1. 54	5. 83	4½-3½		2354. 05	A	3	1. 49	6. 73	1½-1½	
2877. 97	A	60	1. 52	5. 81	3½-2½		2354. 64	A	3	1. 48	6. 72	0½-0½	
2876. 24	A	60	1. 50	5. 79	2½-1½		2875. 97	A	100	2. 47	6. 76	3½-3½	a ⁴D-z ⁴D° (11)
*2873. 46	A	65	1. 49	5. 78	1½-0½		2870. 43	A	100	2. 44	6. 74	2½-2½	
2766. 55	A	150	1. 54	6. 00	4½-3½	a ⁴D-z ⁴P° (6)	2867. 09	A	65	2. 42	6. 73	1½-1½	
2762. 58	A	140	1. 52	5. 99	3½-2½		2865. 34	A	30	2. 41	6. 72	0½-0½	
2757. 72	A	80	1. 50	5. 97	2½-1½		2889. 19	A	35	2. 47	6. 74	3½-2½	
2751. 85	A	85	1. 52	6. 00	3½-3½		2880. 86	A	75	2. 44	6. 73	2½-1½	
2750. 72	A	100	1. 50	5. 99	2½-2½		2873. 81	A	50	2. 42	6. 72	1½-0½	
2748. 98	A	100	1. 49	5. 97	1½-1½		2857. 40	A	40	2. 44	6. 76	2½-3½	
2740. 09	A	35	1. 50	6. 00	2½-3½		2856. 77	A	40	2. 42	6. 74	1½-2½	
2742. 02	A	70	1. 49	5. 99	1½-2½		2858. 64	A	30	2. 41	6. 73	0½-1½	
2743. 63	A	70	1. 48	5. 97	0½-1½		*2226. 47	A	7	2. 47	8. 01	3½-3½	a ⁴D-y ⁴D° (12)
2698. 40	A	100	1. 52	6. 09	3½-2½	a ⁴D-z ⁴P° (7)	2238. 87	A	1	2. 44	7. 96	2½-2½	
2712. 30	A	80	1. 50	6. 05	2½-1½		m2250. 00	P	Cr II	2. 42	7. 91	1½-1½	
2722. 74	A	70	1. 49	6. 02	1½-0½		m2257. 96	P	Cr II	2. 41	7. 88	0½-0½	
2687. 09	A	65	1. 50	6. 09	2½-2½		2215. 30	A	5	2. 44	8. 01	2½-3½	
2703. 85	A	30	1. 49	6. 05	1½-1½		2230. 57	A	2	2. 42	7. 96	1½-2½	
*2717. 51	A	40	1. 48	6. 02	0½-0½		2203. 89	A	8	2. 47	8. 07	3½-4½	a ⁴D-z ⁴G° (13)
2678. 79	A	100	1. 49	6. 09	1½-2½		2199. 09	A	1	2. 44	8. 06	2½-3½	
2698. 68	A	35	1. 48	6. 05	0½-1½								

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2140.50	A	20	2.47	8.24	$3\frac{1}{2}-2\frac{1}{2}$	<i>a</i> ^4D-y $^4P^o$	2129.89	A	50	2.53	8.33	$5\frac{1}{2}-4\frac{1}{2}$	<i>a</i> ^4G-y $^4F^o$
2147.19	A	30	2.44	8.19	$2\frac{1}{2}-1\frac{1}{2}$	(14)	2132.71	A	35	2.53	8.32	$4\frac{1}{2}-3\frac{1}{2}$	
2144.05	A	15	2.42	8.18	$1\frac{1}{2}-0\frac{1}{2}$		2132.93	A	40	2.53	8.32	$3\frac{1}{2}-2\frac{1}{2}$	
*2130.22	A	50	2.44	8.24	$2\frac{1}{2}-2\frac{1}{2}$		2133.03	A	30	2.53	8.32	$2\frac{1}{2}-1\frac{1}{2}$	
2139.54	A	10	2.42	8.19	$1\frac{1}{2}-1\frac{1}{2}$		*2130.22	A	50	2.53	8.33	$4\frac{1}{2}-4\frac{1}{2}$	
2139.33	A	7	2.41	8.18	$0\frac{1}{2}-0\frac{1}{2}$		*2132.62	A	40	2.53	8.32	$3\frac{1}{2}-3\frac{1}{2}$	
m2134.86	P	Cr II	2.41	8.19	$0\frac{1}{2}-1\frac{1}{2}$		2132.38	A	8	2.53	8.32	$2\frac{1}{2}-3\frac{1}{2}$	
2112.16	A	10	2.47	8.31	$3\frac{1}{2}-4\frac{1}{2}$	<i>a</i> ^4D-y $^4G^o$	2127.53	A	8	2.53	8.33	$4\frac{1}{2}-5\frac{1}{2}$	<i>a</i> ^4G-z $^2I^o$
2102.97	A	25	2.44	8.31	$2\frac{1}{2}-3\frac{1}{2}$	(15)	2127.26	A	7	2.53	8.33	$5\frac{1}{2}-5\frac{1}{2}$	(25)
2113.04	A	8	2.47	8.31	$3\frac{1}{2}-3\frac{1}{2}$		2110.68	A	4	2.53	8.38	$4\frac{1}{2}-3\frac{1}{2}$	<i>a</i> ^4G-x $^4D^o$
2102.55	A	5	2.44	8.31	$2\frac{1}{2}-2\frac{1}{2}$		2111.26	A	4	2.53	8.38	$3\frac{1}{2}-2\frac{1}{2}$	(26)
2107.92	A	15	2.47	8.33	$3\frac{1}{2}-4\frac{1}{2}$	<i>a</i> ^4D-y $^4F^o$	2110.92	A	5	2.53	8.38	$2\frac{1}{2}-1\frac{1}{2}$	
2100.34	A	15	2.44	8.32	$2\frac{1}{2}-3\frac{1}{2}$	(16)	2110.98	A	10	2.53	8.38	$2\frac{1}{2}-2\frac{1}{2}$	
*2093.29	A	8	2.42	8.32	$1\frac{1}{2}-2\frac{1}{2}$		2045.30	A	12	2.53	8.57	$5\frac{1}{2}-6\frac{1}{2}$	<i>a</i> ^4G-y $^4H^o$
*2089.12	A	12	2.41	8.32	$0\frac{1}{2}-1\frac{1}{2}$		2054.75	A	10	2.53	8.54	$4\frac{1}{2}-5\frac{1}{2}$	(27)
2110.37	A	5	2.47	8.32	$3\frac{1}{2}-3\frac{1}{2}$		2062.25	A	10	2.53	8.52	$3\frac{1}{2}-4\frac{1}{2}$	
2100.61	A	10	2.44	8.32	$2\frac{1}{2}-2\frac{1}{2}$		2069.38	A	8	2.53	8.50	$2\frac{1}{2}-3\frac{1}{2}$	
2093.62	A	2	2.42	8.32	$1\frac{1}{2}-1\frac{1}{2}$		*2040.68	A	20d	2.53	8.58	$5\frac{1}{2}-4\frac{1}{2}$	<i>a</i> ^4G-x $^4F^o$
2100.96	A	2	2.44	8.32	$2\frac{1}{2}-1\frac{1}{2}$		2041.80	A	7	2.53	8.58	$4\frac{1}{2}-3\frac{1}{2}$	(28)
*2020.69	A	10	2.47	8.58	$3\frac{1}{2}-4\frac{1}{2}$	<i>a</i> ^4D-x $^4F^o$	2046.98	A	8	2.53	8.56	$2\frac{1}{2}-1\frac{1}{2}$	
*2011.13	A	20	2.44	8.58	$2\frac{1}{2}-3\frac{1}{2}$	(17)	2041.02	A	8	2.53	8.58	$4\frac{1}{2}-4\frac{1}{2}$	
2005.50	A	4	2.42	8.58	$1\frac{1}{2}-2\frac{1}{2}$		2041.57	A	6	2.53	8.58	$2\frac{1}{2}-2\frac{1}{2}$	
*2006.61	A	10	2.41	8.56	$0\frac{1}{2}-1\frac{1}{2}$		2040.42	A	4	2.53	8.58	$2\frac{1}{2}-3\frac{1}{2}$	
2020.31	A	1	2.47	8.58	$3\frac{1}{2}-3\frac{1}{2}$		*2022.10	A	12	2.53	8.64	$3\frac{1}{2}-2\frac{1}{2}$	<i>a</i> ^4G-y $^2D^o$
2012.21	A	25	2.44	8.58	$2\frac{1}{2}-2\frac{1}{2}$		2034.88	A	15	2.53	8.60	$2\frac{1}{2}-1\frac{1}{2}$	(29)
2017.48	A	2	2.44	8.56	$2\frac{1}{2}-1\frac{1}{2}$		2021.89	A	5	2.53	8.64	$2\frac{1}{2}-2\frac{1}{2}$	
Vac							2024.20	A	2	2.53	8.63	$3\frac{1}{2}-3\frac{1}{2}$	<i>a</i> ^4G-y $^2G^o$
1836.23	A	12	2.47	9.20	$3\frac{1}{2}-2\frac{1}{2}$	<i>a</i> ^4D-x $^4P^o$	2015.87	A	15	2.53	8.65	$3\frac{1}{2}-4\frac{1}{2}$	(30)
1820.84	A	4	2.44	9.22	$2\frac{1}{2}-1\frac{1}{2}$								
1808.66	A	2	2.42	9.25	$1\frac{1}{2}-0\frac{1}{2}$								
Air													
2297.17	A	50	2.53	7.90	$5\frac{1}{2}-6\frac{1}{2}$	<i>a</i> ^4G-z $^4H^o$	1985.52	A	22	2.53	8.75	$5\frac{1}{2}-5\frac{1}{2}$	<i>a</i> ^4G-x $^4G^o$
2307.19	A	35	2.53	7.88	$4\frac{1}{2}-5\frac{1}{2}$	(19)	1993.63	A	25	2.53	8.73	$4\frac{1}{2}-4\frac{1}{2}$	(31)
2314.71	A	40	2.53	7.86	$3\frac{1}{2}-4\frac{1}{2}$		2202.99	A	30	2.53	8.69	$3\frac{1}{2}-3\frac{1}{2}$	
2320.08	A	30	2.53	7.85	$2\frac{1}{2}-3\frac{1}{2}$		2007.18	A	20	2.53	8.68	$2\frac{1}{2}-2\frac{1}{2}$	
2306.81	A	10	2.53	7.88	$5\frac{1}{2}-5\frac{1}{2}$		1993.37	A	15	2.53	8.73	$5\frac{1}{2}-4\frac{1}{2}$	
2314.81	A	8	2.53	7.86	$4\frac{1}{2}-4\frac{1}{2}$		2007.39	A	10	2.53	8.68	$3\frac{1}{2}-2\frac{1}{2}$	
2320.39	A	10	2.53	7.85	$3\frac{1}{2}-3\frac{1}{2}$		1985.67	A	12	2.53	8.75	$4\frac{1}{2}-5\frac{1}{2}$	
2211.85	A	20	2.53	8.11	$5\frac{1}{2}-5\frac{1}{2}$	<i>a</i> ^4G-z $^4G^o$	Air						
2228.26	A	12	2.53	8.07	$4\frac{1}{2}-4\frac{1}{2}$	(20)	2002.71	A	10	2.53	8.69	$2\frac{1}{2}-3\frac{1}{2}$	
2234.50	A	7	2.53	8.06	$3\frac{1}{2}-3\frac{1}{2}$		2003.88	A	35	2.53	8.69	$5\frac{1}{2}-5\frac{1}{2}$	<i>a</i> ^4G-y $^2H^o$
2239.24	A	8	2.53	8.04	$2\frac{1}{2}-2\frac{1}{2}$		*2004.34	A	35	2.53	8.69	$4\frac{1}{2}-4\frac{1}{2}$	(32)
2227.88	A	10	2.53	8.07	$5\frac{1}{2}-4\frac{1}{2}$		2004.03	A	5	2.53	8.69	$5\frac{1}{2}-4\frac{1}{2}$	
2234.58	A	12	2.53	8.06	$4\frac{1}{2}-3\frac{1}{2}$		*2004.34	A	35	2.53	8.69	$3\frac{1}{2}-4\frac{1}{2}$	
2239.51	A	4	2.53	8.04	$3\frac{1}{2}-2\frac{1}{2}$								
2212.21	A	15	2.53	8.11	$4\frac{1}{2}-5\frac{1}{2}$								
2228.18	A	8	2.53	8.07	$3\frac{1}{2}-4\frac{1}{2}$								
2234.22	A	5	2.53	8.06	$2\frac{1}{2}-3\frac{1}{2}$								
2213.56	A	10	2.53	8.11	$3\frac{1}{2}-4\frac{1}{2}$	<i>a</i> ^4G-z $^2G^o$	1852.13	A	25	2.53	9.20	$5\frac{1}{2}-4\frac{1}{2}$	<i>a</i> ^4G-w $^4F^o$
2220.01	A	2	2.53	8.09	$2\frac{1}{2}-3\frac{1}{2}$	(21)	1858.72	A	15	2.53	9.17	$3\frac{1}{2}-2\frac{1}{2}$	
							1860.12	A	12	2.53	9.17	$2\frac{1}{2}-1\frac{1}{2}$	
2150.10	A	15	2.53	8.27	$3\frac{1}{2}-2\frac{1}{2}$	<i>a</i> ^4G-z $^2D^o$	1852.37	A	3	2.53	9.20	$4\frac{1}{2}-4\frac{1}{2}$	
2166.75	A	10	2.53	8.23	$2\frac{1}{2}-1\frac{1}{2}$	(22)	*1855.14	A	20	2.53	9.19	$3\frac{1}{2}-3\frac{1}{2}$	
							1858.44	A	20	2.53	9.17	$2\frac{1}{2}-2\frac{1}{2}$	
2133.49	A	100	2.53	8.32	$5\frac{1}{2}-5\frac{1}{2}$	<i>a</i> ^4G-y $^4G^o$							
2134.52	A	100	2.53	8.31	$4\frac{1}{2}-4\frac{1}{2}$	(23)	2319.38	A	50	2.69	8.01	$2\frac{1}{2}-3\frac{1}{2}$	<i>a</i> ^4P-y $^4D^o$
2135.34	A	50	2.53	8.31	$3\frac{1}{2}-3\frac{1}{2}$		2345.35	A	25	2.69	7.96	$1\frac{1}{2}-2\frac{1}{2}$	
2134.62	A	75	2.53	8.31	$2\frac{1}{2}-2\frac{1}{2}$		*2366.84	A	35w	2.69	7.91	$0\frac{1}{2}-1\frac{1}{2}$	
2134.20	A	40	2.53	8.31	$5\frac{1}{2}-4\frac{1}{2}$		2345.25	A	15	2.69	7.96	$2\frac{1}{2}-2\frac{1}{2}$	
2135.42	A	50	2.53	8.31	$4\frac{1}{2}-3\frac{1}{2}$		*2366.84	A	35w	2.69	7.91	$1\frac{1}{2}-1\frac{1}{2}$	
2134.88	A	25	2.53	8.31	$3\frac{1}{2}-2\frac{1}{2}$		*2381.48	A	50	2.69	7.88	$0\frac{1}{2}-0\frac{1}{2}$	
2133.81	A	18	2.53	8.32	$4\frac{1}{2}-5\frac{1}{2}$		2366.75	A	5	2.69	7.91	$2\frac{1}{2}-1\frac{1}{2}$	
2135.09	A	15	2.53	8.31	$2\frac{1}{2}-3\frac{1}{2}$		*2381.48	A	50	2.69	7.88	$1\frac{1}{2}-0\frac{1}{2}$	

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2226. 27	A	15	2. 69	8. 24	2½-2½	a ⁴P-y ⁴P° (35)	2333. 46	A	25	3. 09	8. 38	3½-3½	b ⁴D-x ⁴D° (47)
*2244. 90	A	20	2. 69	8. 19	1½-1½		2334. 58	A	10	3. 09	8. 38	2½-2½	
*2249. 91	A	8	2. 69	8. 18	0½-0½		2334. 24	A	7	3. 09	8. 38	1½-1½	
2226. 35	A	15	2. 69	8. 24	1½-2½		2334. 41	A	2	3. 09	8. 38	0½-0½	
*2244. 90	A	20	2. 69	8. 19	0½-1½		2333. 87	A	7	3. 09	8. 38	3½-2½	
2244. 83	A	10	2. 69	8. 19	2½-1½		2334. 45	A	5	3. 09	8. 38	2½-1½	
*2249. 91	A	8	2. 69	8. 18	1½-0½		2334. 83	A	10	3. 09	8. 38	1½-0½	
2170. 71	A	50	2. 69	8. 38	2½-3½	a ⁴P-x ⁴D° (36)	2334. 17	A	8	3. 09	8. 38	2½-3½	
2171. 18	A	30	2. 69	8. 38	1½-2½		2334. 37	A	8	3. 09	8. 38	1½-2½	
*2171. 06	A	40	(2. 69)	8. 38	0½-1½		2333. 84	A	12	3. 09	8. 38	0½-1½	
*2171. 55	A	20	2. 69	8. 38	1½-0½		2286. 27	A	8	3. 09	8. 49	3½-3½	b ⁴D-z ⁴F° (48)
2170. 97	A	10	2. 69	8. 38	2½-1½		2296. 22	A	2	3. 09	8. 47	2½-2½	
*2171. 55	A	20	2. 69	8. 38	1½-0½		2248. 30	A	50	3. 09	8. 58	3½-4½	b ⁴D-x ⁴F° (49)
2150. 65	A	20	2. 69	8. 43	2½-1½	a ⁴P-z ⁴S° (37)	2249. 78	A	30	3. 09	8. 58	1½-2½	
*2150. 74	A	30	(2. 69)	8. 43	1½-1½		*2256. 01	A	50	3. 09	8. 58	0½-1½	
			(2. 69)	8. 43	0½-1½		2247. 91	A	18	3. 09	8. 58	3½-3½	
							2249. 98	A	20	3. 09	8. 58	2½-2½	
2076. 96	A	30	2. 69	8. 64	2½-2½	a ⁴P-y ⁴D° (38)	2256. 38	A	12	3. 09	8. 56	1½-1½	
2090. 70	A	20	2. 69	8. 60	1½-1½		2249. 32	A	2	3. 09	8. 58	3½-2½	
							2256. 56	A	2	3. 09	8. 56	2½-1½	
Vac													
1935. 58	A	25	2. 69	9. 07	2½-3½	a ⁴P-w ⁴D° (39)	2241. 69	A	15	3. 09	8. 60	1½-1½	b ⁴D-y ⁴D° (50)
1937. 56	A	20	2. 69	9. 07	1½-2½		2225. 93	A	1	3. 09	8. 64	1½-2½	
1938. 42	A	3	2. 69	9. 06	0½-1½		2241. 30	A	15	3. 09	8. 60	0½-1½	
1898. 92	A	35	2. 69	9. 20	2½-2½	a ⁴P-x ⁴P° (40)	2217. 89	A	7	3. 09	8. 65	3½-4½	b ⁴D-y ⁴G° (51)
1890. 55	A	30	2. 69	9. 22	1½-1½								
1883. 35	A	10	2. 69	9. 25	0½-0½								
Air													
2506. 11	A	8	3. 09	8. 01	3½-3½	b ⁴D-y ⁴D° (41)	2063. 21	A	10	3. 09	9. 07	3½-3½	b ⁴D-w ⁴D°† (52)
2537. 19	A	2	3. 09	7. 96	2½-2½		2065. 89	A	10	3. 09	9. 07	2½-2½	
2536. 35	A	5	3. 09	7. 96	3½-2½		2066. 75	A	3	3. 09	9. 06	1½-1½	
*2562. 37	A	25wl	3. 09	7. 91	2½-1½		2066. 66	A	2	3. 09	9. 06	0½-0½	
2506. 93	A	4	3. 09	8. 01	2½-3½		2021. 56	A	20	3. 09	9. 20	3½-2½	b ⁴D-x ⁴P° (53)
2536. 93	A	3	3. 09	7. 96	1½-2½		2012. 58	A	20	3. 09	9. 22	2½-1½	
*2561. 59	A	7w	3. 09	7. 91	0½-1½		2004. 24	A	10	3. 09	9. 25	1½-0½	
							*2022. 10	A	12	3. 09	9. 20	2½-2½	
							2012. 43	A	10	3. 09	9. 22	1½-1½	
							2012. 12	A	4	3. 09	9. 22	0½-1½	
2500. 07	A	5	3. 09	8. 03	1½-0½	b ⁴D-z ⁴S° (42)	2006. 91	A	10	3. 09	9. 24	1½-0½	b ⁴D-y ⁴P° (54)
2499. 63	A	5	3. 09	8. 03	0½-0½		2001. 65	A	4	3. 09	9. 26	1½-1½	
							*2006. 61	A	10	3. 09	9. 24	0½-0½	
							2001. 36	A	3	3. 09	9. 26	0½-1½	
2397. 75	A	40	3. 09	8. 24	3½-2½	b ⁴D-y ⁴P° (43)							
2420. 11	A	25	3. 09	8. 19	2½-1½								
2425. 66	A	15	3. 09	8. 18	1½-0½								
2398. 51	A	15	3. 09	8. 24	2½-2½		2935. 12	A	60	3. 81	8. 01	2½-3½	b ⁴P-y ⁴D° (55)
2419. 87	A	15	3. 09	8. 19	1½-1½		2928. 12	A	40	3. 74	7. 96	1½-2½	
2425. 21	A	18	3. 09	8. 18	0½-0½		2930. 83	A	35	3. 70	7. 91	0½-1½	
2398. 28	A	1	3. 09	8. 24	1½-2½		2976. 70	A	35	3. 81	7. 96	2½-2½	
							2961. 70	A	50*	3. 74	7. 91	1½-1½	
							2953. 34	A	35	3. 70	7. 88	0½-0½	
*2402. 98	A	4w	3. 09	8. 23	2½-1½	b ⁴D-z ⁴D° (44)	3011. 42	A	7	3. 81	7. 91	2½-1½	
2382. 20	A	5	3. 09	8. 27	2½-2½		2984. 69	A	10	3. 74	7. 88	1½-0½	
2402. 73	A	3	3. 09	8. 23	1½-1½		2879. 17	A	10	3. 74	8. 03	1½-0½	b ⁴P-z ⁴S° (56)
2381. 97	A	2	3. 09	8. 27	1½-2½								
2402. 31	A	2	3. 09	8. 23	0½-1½								
2378. 90	A	3	3. 09	8. 28	2½-1½	b ⁴D-z ⁴P° (45)	2906. 76	A	2	3. 81	8. 06	2½-3½	b ⁴P-z ⁴G° (57)
2378. 68	A	5	3. 09	8. 28	1½-1½		*2868. 63	A	4wl	3. 74	8. 04	1½-2½	
2378. 28	A	3	3. 09	8. 28	0½-1½		2787. 61	A	55	3. 81	8. 24	2½-2½	b ⁴P-y ⁴P° (58)
2356. 96	A	5	3. 09	8. 33	3½-4½	b ⁴D-y ⁴F°† (46)	2773. 30	A	30	3. 74	8. 19	1½-1½	
2360. 75	A	8	3. 09	8. 32	2½-3½		*2753. 66	A	20	3. 70	8. 18	0½-0½	
*2360. 89	A	6l	(3. 09)	8. 32	1½-2½		2780. 89	A	25	3. 74	8. 18	1½-0½	
			(3. 09)	8. 32	0½-1½		2744. 97	A	40	3. 74	8. 24	1½-2½	
							*2746. 21	A	50	3. 70	8. 19	0½-1½	

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2765.62	A	12	3.81	8.27	2½-2½	b ⁴P -z ⁴D°	2231.02	A	12	3.72	9.25	6½-7½	a ³I-z ³K°
2793.63	A	10	3.81	8.23	2½-1½		2241.47	A	3	3.72	9.23	5½-6½	
2723.64	A	60	3.74	8.27	1½-2½		2241.80	A	30	3.72	9.23	6½-6½	
2761.16	A	5	3.81	8.28	2½-1½	b ⁴P -z ⁴P°	*2130.22	A	50	3.72	9.52	6½-5½	a ³I-w ³H°
2734.07	A	3	3.74	8.26	1½-0½		2121.26	A	30	3.72	9.54	5½-4½	
2719.31	A	3	3.74	8.28	1½-1½								
2736.73	A	5	3.81	8.32	2½-3½	b ⁴P -y ⁴F°	2971.90	A	75	3.75	7.90	6½-6½	a ⁴H-z ⁴H°
*2696.10	A	4	3.74	8.32	1½-2½		2979.73	A	80	3.74	7.88	5½-5½	
2671.02	A	2	3.70	8.32	0½-1½		2985.32	A	75	3.73	7.86	4½-4½	
2737.19	A	3	3.81	8.32	2½-2½		2989.18	A	70	3.72	7.85	3½-3½	
2701.10	A	30	3.81	8.38	2½-3½	b ⁴P -x ⁴D°	2992.42	A	10	3.74	7.86	5½-4½	
2661.59	A	10	3.74	8.38	1½-2½		2994.74	A	20	3.73	7.85	4½-3½	
2636.46	A	10	3.70	8.38	0½-1½		2972.67	A	7w	3.73	7.88	4½-5½	
2701.65	A	15	3.81	8.38	2½-2½		2830.60	A	60	3.75	8.11	6½-5½	a ⁴H-z ⁴G°
2661.41	A	7	3.74	8.38	1½-1½		2849.33	A	18	3.74	8.07	5½-4½	
2637.20	A	10	3.70	8.38	0½-0½		2853.18	A	30	3.73	8.06	4½-3½	
2662.15	A	4	3.74	8.38	1½-0½		2856.32	A	20	3.72	8.04	3½-2½	
2670.06	A	30	3.81	8.43	2½-1½	b ⁴P -z ⁴S°	2848.15	A	4w	3.72	8.06	3½-3½	
2630.93	A	50	3.74	8.43	1½-1½		*2816.83	A	30	3.73	8.11	4½-5½	
*2606.53	A	25	3.70	8.43	0½-1½		2837.88	A	20	3.72	8.07	3½-4½	
2638.05	A	5	3.81	8.49	2½-3½	b ⁴P -z ⁴F°	2822.38	A	100	3.75	8.12	6½-7½	a ⁴H-z ⁴I°
2650.38	A	2	3.81	8.47	2½-2½		2830.46	A	100	3.74	8.10	5½-6½	
							2840.01	A	85	3.73	8.08	4½-5½	
							2851.35	A	60	3.72	8.05	3½-4½	
							2837.96	A	4	3.75	8.10	6½-6½	
2950.69	A	7	3.72	7.90	6½-6½	a ²I-z ²H°	*2846.44	A	30	3.74	8.08	5½-5½	
*2950.10	A	10	3.72	7.90	5½-6½		2856.42	A	4	3.73	8.05	4½-4½	
*2811.45	A	10	3.72	8.11	6½-5½	a ²I-z ²G°	2825.33	A	20	3.74	8.11	5½-4½	a ⁴H-z ²G°
*2810.89	A	6	3.72	8.11	5½-5½		2830.08	A	8	3.73	8.09	4½-3½	
							2814.22	A	5	3.72	8.11	3½-4½	
2803.22	A	8	3.72	8.12	6½-7½	a ²I-z ²I°	2703.56	A	75	3.75	8.32	6½-5½	
2818.08	A	3	3.72	8.10	5½-6½		*2697.90	A	30	3.74	8.31	5½-4½	a ⁴H-y ⁴G°
2818.66	A	5	3.72	8.10	6½-6½		2693.53	A	45	3.73	8.31	4½-3½	
2686.00	A	8	3.72	8.32	6½-5½	a ²I-y ²G°	2688.28	A	55	3.72	8.31	3½-2½	
2686.66	A	4	3.72	8.31	5½-4½		2696.76	A	20	3.74	8.32	5½-5½	
2670.24	A	25	3.72	8.34	6½-6½	a ²I-z ²I°	2689.03	A	20	3.72	8.31	3½-3½	
2675.67	A	20	3.72	8.33	5½-5½		2687.60	A	3	3.72	8.31	3½-4½	
2590.72	A	75	3.72	8.49	6½-5½	a ²I-z ²H°	*2691.03	A	90	3.74	8.33	5½-4½	a ⁴H-y ⁴F°
2607.90	A	50	3.72	8.45	5½-4½		2689.20	A	35	3.73	8.32	4½-3½	
										3.72	8.32	3½-2½	
2547.76	A	10	3.72	8.57	6½-6½	a ²I-y ²H°	*2685.19	A	18	3.73	8.33	4½-4½	
*2561.59	A	7w	3.72	8.54	5½-5½		2684.72	A	7	3.72	8.32	3½-3½	
2573.32	A	4	3.72	8.52	5½-4½		2680.85	A	5	3.74	8.34	5½-6½	a ⁴H-z ²I°
2540.22	A	3	3.72	8.58	5½-4½	a ²I-x ²F°	2681.07	A	3	3.73	8.33	4½-5½	
2501.48	A	25	3.72	8.65	5½-4½	a ²I-y ²G°	2607.06	A	12	3.75	8.49	6½-5½	a ⁴H-z ²H°
							2618.49	A	7	3.74	8.45	5½-4½	
							2600.73	A	5w	3.74	8.49	5½-5½	
2454.47	A	30	3.72	8.75	6½-5½	a ²I-x ²G°	2595.34	A	4w1	3.73	8.49	4½-5½	
2466.22	A	10	3.72	8.73	5½-4½		2608.80	A	8	3.72	8.45	3½-4½	
2454.06	A	15	3.72	8.75	5½-5½		2601.58	A	6	3.72	8.47	3½-2½	a ⁴H-z ²F°
2483.79	A	40	3.72	8.69	6½-5½	a ²I-y ²H°	2563.58	A	50	3.75	8.57	6½-6½	a ⁴H-y ⁴H°
2483.67	A	25	3.72	8.69	5½-4½		2571.78	A	50	3.74	8.54	5½-5½	
2257.96	A	50	3.72	9.19	6½-6½	a ²I-y ²I°	*2578.31	A	40	3.73	8.52	4½-4½	
2257.76	A	45	3.72	9.19	5½-5½		2584.10	A	50	3.72	8.50	3½-3½	
2258.09	A	40	3.72	9.19	6½-5½		2577.97	A	5	3.75	8.54	6½-5½	
2257.62	A	35	3.72	9.19	5½-6½		2583.61	A	12	3.74	8.52	5½-4½	
2243.62	A	50	3.72	9.22	6½-7	a ²I-x ²H°	2588.25	A	12	3.73	8.50	4½-3½	
*2256.01	A	50	3.72	9.19	5½-4½		2557.45	A	10	3.74	8.57	5½-6½	
2243.28	A	40	3.72	9.22	5½-5½		2566.52	A	8	3.73	8.54	4½-5½	
							2574.18	A	7	3.72	8.52	3½-4½	

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	E P		J	Multiplet (No.)
			Low	High					Low	High		
Air							Air					
*2550.28	A	15	3.74	8.58	5½-4½	a ⁴H-x ⁴F°	2727.25	A	85	3.85	8.38	4½-3½
2544.58	A	2	3.73	8.58	4½-3½	(90)	2724.04	A	65	3.85	8.38	3½-2½
2542.38	A	3	3.72	8.58	3½-2½		2720.06	A	50	3.84	8.38	2½-1½
2511.22	A	20	3.74	8.65	5½-4½	a ⁴H-y ⁴G°	2723.48	A	40	3.84	8.38	1½-0½
2519.08	A	25	3.73	8.63	4½-3½	(91)	2720.25	A	40	3.84	8.38	2½-2½
2469.13	A	20	3.75	8.75	6½-5½	a ⁴H-x ⁴G°	*2717.51	A	40	3.84	8.38	1½-1½
2475.69	A	30	3.74	8.73	5½-4½	(92)	2719.68	A	3	3.84	8.38	2½-3½
2486.29	A	30	3.73	8.69	4½-3½		*2659.47	A	10wd?	3.85	8.49	3½-3½
2489.28	A	50	3.72	8.68	3½-2½		2655.78	A	10	3.84	8.49	2½-3½
*2463.46	A	8	3.74	8.75	5½-5½		*2643.02	A	5	3.85	8.52	3½-4½
2470.81	A	8	3.73	8.73	4½-4½		2649.89	A	1	3.84	8.50	2½-3½
2482.48	A	10	3.72	8.69	3½-3½		2646.60	A	2	3.85	8.52	4½-4½
2498.80	A	40	3.75	8.69	6½-5½	a ⁴H-y ⁴H°	2611.62	A	20	3.85	8.58	4½-4½
2493.28	A	25	3.74	8.69	5½-4½	(93)	2607.64	A	10	3.85	8.58	3½-3½
2488.34	A	12w	3.73	8.69	4½-4½		2606.07	A	12	3.84	8.58	2½-2½
2966.03	A	40	3.85	8.01	4½-3½	a ⁴F-y ⁴D°	2612.56	A	15	3.84	8.56	1½-1½
3003.92	A	35	3.85	7.96	3½-2½	(94)	*2611.04	A	30	3.85	8.58	4½-3½
3034.54	A	25	3.84	7.91	2½-1½		2609.55	A	3	3.85	8.58	3½-2½
3055.44	A	15	3.84	7.88	1½-0½		2614.90	A	10	3.84	8.56	2½-1½
2999.30	A	8	3.84	7.96	2½-2½		2608.17	A	20	3.85	8.58	3½-4½
2898.53	A	50	3.85	8.11	4½-5½	a ⁴F-z ⁴G°	2604.16	A	20	3.84	8.58	2½-3½
2921.81	A	40	3.85	8.07	3½-4½	(95)	2603.73	A	10	3.84	8.58	1½-2½
*2928.32	A	50	3.84	8.06	2½-3½		2592.86	A	3	3.84	8.60	1½-1½
2933.95	A	35	3.84	8.04	1½-2½							a ⁴F-y ⁴D° (106)
2926.15	A	18	3.85	8.07	4½-4½		2570.70	A	7	3.85	8.65	4½-4½
2932.69	A	30	3.85	8.06	3½-3½		2580.68	A	1w	3.85	8.63	3½-3½
2936.92	A	25	3.84	8.04	2½-2½		2567.34	A	10	3.85	8.65	3½-4½
2941.32	A	3	3.85	8.04	3½-2½		*2577.48	A	4	3.84	8.63	2½-3½
2936.05	A	3	3.85	8.05	3½-4½	a ⁴F-z ⁴I°	2520.65	A	40	3.85	8.75	4½-5½
2940.42	A	2	3.85	8.05	4½-4½	(96)	2530.18	A	150wl*	3.85	8.73	3½-4½
2901.00	A	12	3.85	8.11	4½-4½	a ⁴F-z ⁴G°	2543.14	A	30	3.84	8.69	2½-3½
2908.29	A	10	3.85	8.09	3½-3½	(97)	2548.04	A	25	3.84	8.68	1½-2½
2912.53	A	1	3.85	8.09	4½-3½		2553.45	A	10	3.85	8.73	4½-4½
2896.74	A	35	3.85	8.11	3½-4½		2546.45	A	20	3.85	8.69	3½-3½
2903.97	A	20	3.84	8.09	2½-3½		*2550.28	A	15	3.84	8.68	2½-2½
*2811.45	A	10	3.85	8.24	3½-2½	a ⁴F-y ⁴P°	2549.72	A	1	3.85	8.69	4½-3½
					(98)		2553.62	A	3	3.85	8.68	3½-2½
2789.08	A	8	3.85	8.27	3½-2½	a ⁴F-z ⁴D°	2551.58	A	50	3.85	8.69	4½-5½
2813.53	A	5	3.84	8.23	2½-1½	(99)	2548.58	A	40	3.85	8.69	3½-4½
2785.10	A	10	3.84	8.27	2½-2½		2551.88	A	7	3.85	8.69	4½-4½
2810.78	A	5	3.84	8.23	1½-1½							a ⁴F-y ⁴F° (109)
2782.44	A	3	3.84	8.27	1½-2½		2532.99	A	6	3.84	8.71	2½-2½
2765.46	A	20	3.85	8.32	4½-5½	a ⁴F-y ⁴G°	2515.89	A	4	3.84	8.75	2½-3½
2762.78	A	10	3.85	8.31	3½-4½	(100)	*2530.78	A	20	3.84	8.71	1½-2½
2760.36	A	20	3.84	8.31	2½-3½							a ⁴F-w ⁴D° (111)
2756.96	A	20	3.84	8.31	1½-2½		2365.26	A	20w	3.85	9.07	4½-3½
2764.28	A	15	3.85	8.31	3½-3½		2365.15	A	4	3.85	9.07	3½-2½
2768.16	A	10	3.85	8.31	4½-3½		2363.65	A	3	3.84	9.06	2½-1½
2759.40	A	50	3.85	8.33	4½-4½	a ⁴F-y ⁴F°	2362.00	A	1	3.84	9.06	1½-0½
2759.73	A	30	3.85	8.32	3½-3½	(101)	2362.26	A	2	3.84	9.07	2½-2½
2756.30	A	40	3.84	8.32	2½-2½							a ⁴F-y ⁴D° (112)
2754.28	A	30	3.84	8.32	1½-1½		2977.65	A	2	3.87	8.01	2½-3½
2763.59	A	20	3.85	8.32	4½-3½							a ⁴D-z ⁴G° (113)
2760.20	A	12	3.85	8.32	3½-2½		2948.47	A	3	3.87	8.06	2½-3½
2756.89	A	15	3.84	8.32	2½-1½		2973.10	A	12	3.89	8.04	1½-2½
2755.53	A	15	3.85	8.33	3½-4½		*2957.26	A	4	3.87	8.04	2½-2½
2755.81	A	10	3.84	8.32	2½-3½		2923.80	A	8	3.87	8.09	2½-3½
*2753.66	A	20	3.84	8.32	1½-2½							a ⁴D-z ⁴G° (114)

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air							Vac						
2825.95	A	7	3.87	8.24	2½-2½	a ¹D-y ⁴P°	1939.15	A	6	3.87	10.24	2½-1½	a ¹D-w ²P°
2840.43	A	12	3.89	8.24	1½-2½	(115)	1948.51	A	10	3.89	10.23	1½-0½	(136)
2803.35	A	20	3.87	8.27	2½-2½	a ¹D-z ³D°	1945.98	A	10	3.89	10.24	1½-1½	
2846.70	A	15	3.89	8.23	1½-1½	(116)	Air						
*2817.57	A	8	3.89	8.27	1½-2½		2999.96	A	25	3.99	8.11	3½-4½	a ¹F-z ²G°
2798.77	A	30	3.87	8.28	2½-1½	a ¹D-z ³P°	3034.99	A	20	4.02	8.09	2½-3½	(137)
2828.79	A	15	3.89	8.26	1½-0½	(117)	3012.33	A	3	3.99	8.09	3½-3½	
2778.27	A	4	3.87	8.31	2½-3½	a ¹D-y ⁴G°	2746.15	A	15	3.99	8.49	3½-3½	a ¹F-z ²F°
2791.45	A	5	3.89	8.31	1½-2½	(118)	2778.51	A	5	4.02	8.47	2½-2½	(138)
2788.74	A	5	3.89	8.32	1½-1½	a ¹D-y ⁴F°	2764.96	A	10	4.02	8.49	2½-3½	
						(119)	2758.61	A	15	4.02	8.50	2½-3½	a ¹F-y ⁴H°
*2737.09	A	15	3.87	8.38	2½-3½	a ¹D-x ⁴D°	2693.00	A	4	3.99	8.58	3½-2½	a ¹F-x ⁴F°
2751.22	A	4	3.89	8.38	1½-2½	(120)	2720.69	A	15	4.02	8.56	2½-1½	(140)
2737.66	A	3	3.87	8.38	2½-2½		2658.91	A	40	3.99	8.64	3½-2½	a ¹F-y ²D°
2751.04	A	4	3.89	8.38	1½-1½		2699.34	A	20	4.02	8.60	2½-1½	(141)
2737.47	A	4	3.87	8.38	2½-1½		2676.53	A	5	4.02	8.64	2½-2½	
2718.43	A	55	3.89	8.43	1½-1½	a ¹D-z ³S°	2648.08	A	15	3.99	8.65	3½-4½	a ¹F-y ³G°
						(121)	2680.16	A	8	4.02	8.63	2½-3½	(142)
2672.37	A	15	3.87	8.49	2½-3½	a ¹D-z ²F°	2608.60	A	1	3.99	8.73	3½-4½	a ¹F-x ⁴G°
2698.11	A	8	3.89	8.47	1½-2½	(122)	*2643.02	A	5	4.02	8.69	2½-3½	(143)
2685.04	A	18	3.87	8.47	2½-2½		2625.87	A	2	3.99	8.69	3½-3½	
2620.10	A	1w	3.87	8.58	2½-3½	a ¹D-x ⁴F°	2650.80	A	7	4.02	8.68	2½-2½	
2622.03	A	3	3.87	8.58	2½-2½	(123)	2596.87	A	8	3.99	8.75	3½-3½	a ¹F-y ²P°
2643.54	A	12	3.89	8.56	1½-1½		2632.10	A	3	4.02	8.71	2½-2½	(144)
2589.70	A	30	3.87	8.64	2½-2½	a ¹D-y ³D°	2476.90	A	20	3.99	8.98	3½-4½	a ¹F-x ³G°
2623.39	A	30	3.89	8.60	1½-1½	(124)	2496.44	A	10	4.02	8.97	2½-3½	(145)
*2611.04	A	30	3.87	8.60	2½-1½		2481.09	A	4	3.99	8.97	3½-3½	
2601.85	A	10	3.89	8.64	1½-2½		2393.99	A	50	3.99	9.15	3½-3½	a ²F-x ²F°
						(125)	2389.75	A	40	4.02	9.19	2½-2½	(146)
*2577.48	A	4	3.87	8.68	1½-2½		2375.69	A	4	3.99	9.19	3½-2½	
*2530.78	A	20	3.87	8.75	2½-3½	a ¹D-y ²F°	2376.40	A	5	3.99	9.19	3½-3½	a ²F-w ⁴F°
2559.76	A	15	3.89	8.71	1½-2½	(126)	2396.48	A	10	4.02	9.17	2½-2½	(147)
2372.63	A	2	3.87	9.07	2½-3½	a ¹D-w ⁴D°	2358.82	A	5	4.02	9.26	2½-1½	a ²F-y ²P°
2387.03	A	4	3.89	9.06	1½-1½	(127)							(148)
2337.74	A	20	3.87	9.15	2½-3½	a ¹D-x ²F°	2300.58	A	30	3.99	9.36	3½-4½	a ²F-w ²G°
2330.03	A	10	3.89	9.19	1½-2½	(128)	2318.77	A	10	4.02	9.35	2½-3½	(149)
2320.29	A	5	3.87	9.19	2½-2½		2305.52	A	2	3.99	9.35	3½-3½	
2320.94	A	1	3.87	9.19	2½-3½	a ²D-w ⁴F°	2245.33	A	7	3.99	9.49	3½-3½	a ²F-w ²F°
2336.42	A	3	3.89	9.17	1½-2½	(129)	2252.37	A	4	4.02	9.50	2½-2½	(150)
2326.61	A	3	3.87	9.17	2½-2½		2193.30	A	20	3.99	9.62	3½-2½	a ²F-x ²D°
2304.02	A	4	3.89	9.25	1½-0½	a ¹D-z ⁴P°	2196.84	A	15	4.02	9.64	2½-1½	(151)
2291.11	A	10	3.87	9.26	2½-1½	a ²D-y ²P°	2079.86	A	10	3.99	9.93	3½-2½	a ²F-w ²D°
*2307.56	A	10wl	3.89	9.24	1½-0½	(131)	2096.42	A	6	4.02	9.91	2½-1½	(152)
2195.78	A	4	3.87	9.49	2½-3½	a ²D-w ²F°	2036.98	A	3	3.99	10.05	3½-3½	a ²F-v ²F°
2199.23	A	2	3.89	9.50	1½-2½	(132)	2047.32	A	2	4.02	10.03	2½-2½	(153)
2190.52	A	2	3.87	9.50	2½-2½		2145.97	A	15	3.99	10.61	3½-4½	a ²F-w ²P°
2156.22	A	20	3.87	9.59	2½-1½	a ¹D-x ²P°	2146.23	A	10	4.02	10.45	3½-3½	a ²F-u ²F°
2161.66	A	10	3.89	9.60	1½-0½	(133)	2137.96	A	8	4.02	10.44	2½-2½	(155)
2164.67	A	7	3.89	9.59	1½-1½		1987.43	A	5	4.02	10.24	2½-1½	
2145.97	A	15	3.87	9.62	2½-2½	a ¹D-x ²D°	1911.36	A	7	3.99	10.45	3½-3½	
2146.23	A	10	3.89	9.64	1½-1½	(134)	1923.02	A	8	4.02	10.44	2½-2½	
2137.96	A	15	3.87	9.64	2½-1½		1806.32	A	15	3.99	10.61	3½-4½	a ²F-v ²G°
*2037.26	A	4	3.87	9.93	2½-2½	a ²D-w ²D°	1887.96	A	6	4.02	10.56	2½-3½	(156)
2050.32	A	10	3.89	9.91	1½-1½	(135)	1879.05	A	10	3.99	10.56	3½-3½	
2042.78	A	5	3.87	9.91	2½-1½								
2044.76	A	1	3.89	9.93	1½-2½								

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High						Low	High			
Air														
*2949. 79	A	10	4. 05	8. 24	3½-2½	b ⁴F-y ⁴P°	*2402. 98	A	4w	4. 06	9. 19	4½-4½	b ⁴F-x ⁴H°	
*2951. 39	A	10	4. 06	8. 24	2½-2½	(157)							(171)	
2925. 22	A	3	4. 05	8. 27	3½-2½	b ⁴F-z ⁴D°	2332. 39	A	3	4. 06	9. 35	2½-3½	b ⁴F-w ⁴G°	
2958. 17	A	1	4. 06	8. 23	2½-1½	(158)							(172)	
*2957. 26	A	4	4. 05	8. 23	1½-1½									
2925. 90	A	3	4. 05	8. 27	1½-2½		*2224. 87	A	1	4. 05	9. 60	1½-0½	b ⁴F-x ⁴P°	
*2896. 45	A	40	4. 06	8. 32	4½-5½	b ⁴F-y ⁴G°								
2896. 31	A	30	4. 05	8. 31	3½-4½	(159)								
2899. 48	A	35	4. 06	8. 31	2½-3½		2985. 01	A	7	4. 14	8. 27	3½-2½	b ⁴G-z ⁴D°	
2897. 73	A	20	4. 05	8. 31	1½-2½		3008. 30	A	6	4. 13	8. 23	2½-1½	(174)	
2897. 82	A	10	4. 06	8. 31	4½-4½									
2889. 82	A	25	4. 06	8. 33	4½-4½	b ⁴F-y ⁴F°	2970. 65	A	2	4. 13	8. 28	2½-1½	b ⁴G-z ⁴P°	
2892. 95	A	20	4. 05	8. 32	3½-3½	(160)							(175)	
*2895. 02	A	18	4. 06	8. 32	2½-2½		2968. 68	A	15	4. 16	8. 32	5½-5½	b ⁴G-y ⁴G°	
2894. 81	A	18	4. 05	8. 32	1½-1½		2963. 46	A	20	4. 15	8. 31	4½-4½		
2894. 40	A	10	4. 06	8. 32	4½-3½		2956. 60	A	10	4. 14	8. 31	3½-3½		
*2893. 50	A	4wl	4. 05	8. 32	3½-2½		2965. 18	A	2	4. 15	8. 31	4½-3½		
2895. 66	A	5	4. 06	8. 32	2½-1½		2955. 68	A	2	4. 14	8. 31	3½-2½		
2888. 33	A	2wl	4. 05	8. 33	3½-4½									
2854. 58	A	5	4. 06	8. 38	4½-3½	b ⁴F-x ⁴D°	2961. 72	A	50*	4. 16	8. 33	5½-4½	b ⁴G-y ⁴F°	
2853. 76	A	8	4. 05	8. 38	3½-2½	(161)	2959. 95	A	18	4. 15	8. 32	4½-3½		
*2855. 05	A	35	{4. 06	8. 38	2½-1½		2951. 94	A	10	4. 14	8. 32	3½-2½		
2854. 23	A	3	{4. 05	8. 38	1½-0½		2943. 64	A	4	4. 13	8. 32	2½-1½		
							2955. 12	A	10	4. 15	8. 33	4½-4½		
2728. 17	A	15	4. 06	8. 58	4½-4½	b ⁴F-x ⁴F°	*2951. 39	A	10	4. 14	8. 32	3½-3½		
2728. 26	A	15	4. 05	8. 58	3½-3½	(162)	2942. 99	A	3	4. 13	8. 32	2½-2½		
2729. 73	A	6	4. 06	8. 58	2½-2½			2949. 44	A	20	4. 16	8. 34	5½-6½	b ⁴G-z ⁴I°
2738. 67	A	2	4. 05	8. 56	1½-1½		*2950. 10	A	10	4. 15	8. 33	4½-5½		
2727. 59	A	1	4. 06	8. 58	4½-3½			2918. 29	A	3	4. 15	8. 38	4½-3½	b ⁴G-x ⁴D°
2728. 93	A	2	4. 05	8. 58	1½-2½		*2910. 64	A	30	4. 14	8. 38	3½-2½	(179)	
2694. 70	A	7	4. 06	8. 64	2½-2½	b ⁴F-y ⁴D°	2852. 75	A	7	4. 16	8. 49	5½-5½	b ⁴G-z ⁴H°	
2717. 05	A	7	4. 05	8. 60	1½-1½	(163)	*2867. 94	A	4w	4. 15	8. 45	4½-4½	(180)	
2629. 04	A	5	4. 06	8. 75	4½-5½	b ⁴F-x ⁴G°	2844. 83	A	3	4. 15	8. 49	4½-3½	b ⁴G-z ⁴F°	
*2641. 80	A	25	4. 05	8. 73	3½-4½	(164)							(181)	
2660. 77	A	8	4. 06	8. 69	2½-3½		2800. 77	A	85	4. 16	8. 57	5½-6½	b ⁴G-y ⁴H°	
*2667. 89	A	25wl	4. 05	8. 68	1½-2½		*2812. 00	A	85	4. 15	8. 54	4½-5½	(182)	
*2643. 02	A	5	4. 06	8. 73	4½-4½		2818. 36	A	75	4. 14	8. 52	3½-4½		
*2659. 47	A	10wd?	4. 05	8. 69	3½-3½		2822. 01	A	65	4. 13	8. 50	2½-3½		
2662. 72	A	7	4. 06	8. 69	4½-5½	b ⁴F-y ⁴H°	2817. 96	A	12	4. 16	8. 54	5½-5½		
2663. 02	A	10	4. 06	8. 69	4½-4½	(165)	2826. 15	A	10	4. 15	8. 52	4½-4½		
2649. 66	A	7	4. 06	8. 71	2½-2½	b ⁴F-y ⁴F°	2830. 24	A	10	4. 14	8. 50	3½-3½		
2648. 95	A	2	4. 05	8. 71	1½-2½	(166)		2792. 16	A	80	4. 16	8. 58	5½-4½	b ⁴G-x ⁴F°
2506. 76	A	5w	4. 05	8. 98	3½-4½	b ⁴F-x ⁴G°	2785. 69	A	65	4. 15	8. 58	4½-3½		
2512. 22	A	8	4. 06	8. 97	2½-3½	(167)	*2780. 30	A	85	4. 14	8. 58	3½-2½		
2460. 42	A	30	4. 06	9. 07	4½-3½	b ⁴F-w ⁴D°	2782. 36	A	40	4. 13	8. 56	2½-1½		
2462. 35	A	15	4. 05	9. 07	3½-2½	(168)	2786. 30	A	2	4. 15	8. 58	4½-4½		
2464. 94	A	8	4. 06	9. 06	2½-1½		2772. 33	A	8	4. 13	8. 58	2½-2½		
2464. 62	A	7	4. 05	9. 06	1½-0½		2743. 94	A	6	4. 14	8. 64	3½-2½	b ⁴G-y ⁴D°	
2459. 35	A	8	4. 05	9. 07	3½-3½		2760. 04	A	20	4. 13	8. 60	2½-1½		
*2463. 46	A	8	4. 06	9. 07	2½-2½		2736. 20	A	2	4. 13	8. 64	2½-2½		
2464. 31	A	4	4. 05	9. 06	1½-1½		2745. 41	A	12	4. 16	8. 65	5½-4½	b ⁴G-y ⁴G°	
2462. 82	A	1	4. 05	9. 07	1½-2½		2755. 18	A	2	4. 15	8. 63	4½-3½		
2422. 93	A	2	4. 06	9. 15	4½-3½	b ⁴F-x ⁴F°	2739. 74	A	7	4. 15	8. 65	4½-4½		
2421. 90	A	3	4. 05	9. 15	3½-3½	(169)	2747. 76	A	7	4. 14	8. 63	3½-3½		
2404. 22	A	3	4. 06	9. 19	2½-2½		2732. 41	A	2	4. 14	8. 65	3½-4½		
2403. 62	A	3	4. 05	9. 19	1½-2½									
2400. 24	A	15	4. 06	9. 20	4½-4½	b ⁴F-w ⁴F°	2688. 41	A	45	4. 16	8. 75	5½-5½		
2403. 87	A	10	4. 05	9. 19	3½-3½	(170)	2697. 51	A	25	4. 15	8. 73	4½-4½		
2411. 01	A	15	4. 06	9. 17	2½-2½		2708. 78	A	65	4. 14	8. 69	3½-3½		
2413. 06	A	8	4. 06	9. 17	1½-1½		2709. 31	A	60	4. 13	8. 68	2½-2½		
2409. 96	A	5	4. 05	9. 17	3½-2½		*2702. 96	A	4wl	4. 16	8. 73	5½-4½		
2413. 64	A	15w	4. 06	9. 17	2½-1½		2715. 97	A	3	4. 15	8. 69	4½-3½		
2399. 21	A	3	4. 05	9. 20	3½-4½		2716. 89	A	6	4. 14	8. 68	3½-2½		
2404. 92	A	8	4. 06	9. 19	2½-3½		2682. 95	A	1	4. 15	8. 75	4½-5½		
2410. 43	A	3	4. 05	9. 17	1½-2½		2690. 41	A	2w	4. 14	8. 73	3½-4½		
							*2701. 24	A	20	4. 13	8. 69	2½-3½		

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Air							Air						
*2718. 086	A	12	4. 15	8. 69	4½-5½	b ⁴G - y ²H°	2929. 78	A	4	4. 36	8. 58	1½-2½	a ³P - x ⁴F°
2711. 19	A	20	4. 14	8. 69	3½-4½	(187)	2881. 91	A	45	4. 28	8. 56	0½-1½	(206)
2689. 79	A	10	4. 13	8. 71	2½-2½	b ⁴G - y ²F°	2940. 97	A	7	4. 36	8. 56	1½-1½	(188)
2468. 67	A	1	4. 15	9. 15	4½-3½	b ⁴G - x ²F°	2889. 50	A	35	4. 36	8. 64	1½-2½	a ³P - y ²D°
2443. 35	A	5	4. 14	9. 19	3½-2½	(189)	2857. 99	A	20	4. 28	8. 60	0½-1½	
2449. 63	A	25	4. 16	9. 20	5½-4½	b ⁴G - w ²F°	2916. 07	A	10	4. 36	8. 60	1½-1½	(190)
2449. 95	A	25	4. 15	9. 19	4½-3½	(190)	2360. 14	A	10	4. 36	9. 59	1½-1½	a ³P - x ³P°
2450. 37	A	20	4. 14	9. 17	3½-2½		2318. 49	A	2	4. 28	9. 60	0½-0½	
2446. 91	A	15	4. 13	9. 17	2½-1½		2356. 58	A	4	4. 36	9. 60	1½-0½	
*2445. 09	A	10	4. 15	9. 20	4½-4½		2321. 95	A	4	4. 28	9. 59	0½-1½	
2444. 08	A	7	4. 14	9. 19	3½-3½		2218. 36	A	6	4. 36	9. 93	1½-2½	a ³P - w ²D°
2444. 20	A	7	4. 13	9. 17	2½-2½		2190. 92	A	5	4. 28	9. 91	0½-1½	
2294. 46	A	8	4. 13	9. 50	2½-2½	b ⁴G - w ²F°	*2224. 87	A	1	4. 36	9. 91	1½-1½	(191)
2946. 81	A	50	4. 30	8. 49	5½-5½	a ²H - z ²H°	*2949. 79	A	10	4. 40	8. 58	3½-4½	b ²F - x ⁴F°
2953. 70	A	45	4. 28	8. 45	4½-4½	(192)	*2945. 74	A	7w	4. 39	8. 58	2½-3½	(210)
2969. 67	A	15	4. 30	8. 45	5½-4½		2949. 07	A	2	4. 40	8. 58	3½-3½	
2931. 07	A	4	4. 28	8. 49	4½-5½		2948. 20	A	3	4. 39	8. 58	2½-2½	
2929. 18	A	2	4. 28	8. 49	4½-3½	a ²H - z ²F°	*2910. 64	A	30	4. 40	8. 64	3½-2½	b ²F - u ¹D°
						(193)	2934. 30	A	20	4. 39	8. 60	2½-1½	
2891. 40	A	20	4. 30	8. 57	5½-6½	a ²H - y ⁴H°	2897. 67	A	30	4. 40	8. 65	3½-4½	b ²F - y ⁴G°
2924. 86	A	2	4. 30	8. 52	5½-4½	(194)	2911. 69	A	35	4. 39	8. 63	2½-3½	(212)
2832. 45	A	60	4. 30	8. 65	5½-4½	a ²H - y ²G°	*2867. 94	A	4w	4. 39	8. 69	2½-3½	b ²F - x ⁴G°
2834. 24	A	60	4. 28	8. 63	4½-3½	(195)							
2787. 30	A	5	4. 30	8. 73	5½-4½	a ²H - x ⁴G°	2836. 47	A	30	4. 40	8. 75	3½-3½	b ²F - y ²F°
2792. 79	A	4	4. 28	8. 69	4½-3½	(196)	*2855. 05	A	35	4. 39	8. 71	2½-2½	(214)
2809. 27	A	6	4. 30	8. 69	5½-5½	a ²H - y ²H°	2833. 37	A	8	4. 39	8. 75	2½-3½	
2795. 32	A	2	4. 28	8. 69	4½-4½	(197)	*2693. 87	A	7w	4. 40	8. 98	3½-4½	b ²F - x ⁴G°
2809. 56	A	5	4. 30	8. 69	5½-4½		*2696. 10	A	4	4. 39	8. 97	2½-3½	(215)
2637. 48	A	20	4. 30	8. 98	5½-4½	a ²H - x ²G°	2639. 32	A	8	4. 40	9. 07	3½-3½	b ²F - w ⁴D°
2629. 58	A	8	4. 28	8. 97	4½-3½	(198)	2640. 00	A	7	4. 39	9. 07	2½-2½	(216)
2523. 76	A	15w1	4. 30	9. 19	5½-6½	a ²H - y ²I°	2596. 17	A	40	4. 40	9. 15	3½-3½	b ²F - x ²F°
2512. 38	A	10	4. 28	9. 19	4½-5½	(199)	2572. 11	A	15	4. 39	9. 19	2½-2½	(217)
2523. 93	A	15	4. 30	9. 19	5½-5½		2575. 47	A	3	4. 40	9. 19	3½-3½	b ²F - w ⁴F°
2505. 86	A	20	4. 30	9. 22	5½-5½	a ²H - x ²H°	2579. 88	A	4	4. 39	9. 17	2½-2½	(218)
2510. 24	A	20	4. 28	9. 19	4½-4½	(200)	2582. 91	A	4w	4. 39	9. 17	2½-1½	
2521. 76	A	5	4. 30	9. 19	5½-4½		2486. 66	A	20	4. 40	9. 36	3½-4½	
2503. 62	A	3	4. 30	9. 23	5½-6½	a ²H - z ²K°	2490. 07	A	20	4. 39	9. 35	2½-3½	b ²F - w ²G°
2438. 46	A	35	4. 30	9. 36	5½-4½	a ²H - w ²G°	2361. 79	A	3	4. 40	9. 62	3½-2½	b ²F - x ²D°
2433. 20	A	25	4. 28	9. 35	4½-3½	(202)	2350. 00	A	2	4. 39	9. 64	2½-1½	(220)
2427. 68	A	4	4. 28	9. 36	4½-4½		2181. 54	A	4	4. 40	10. 05	3½-3½	b ²F - v ²F°
*2365. 26	A	20w	4. 30	9. 52	5½-5½	a ²H - w ²H°	2189. 24	A	3	4. 39	10. 03	2½-2½	(221)
2344. 54	A	20	4. 28	9. 54	4½-4½	(203)	2191. 08	A	2	4. 40	10. 03	3½-2½	
2354. 59	A	3	4. 30	9. 54	5½-4½		2179. 72	A	2	4. 39	10. 05	2½-3½	
2355. 10	A	3	4. 28	9. 52	4½-5½		*2037. 26	A	4	4. 40	10. 45	3½-3½	b ²F - u ²F°
Vac							2038. 64	A	2	4. 39	10. 44	2½-2½	
1998. 14	A	2	4. 28	10. 45	4½-3½	a ²H - u ²F°	Vac						
						(204)	*1963. 00	A	15	4. 39	10. 68	2½- 1½	b ²F - v ²D°
1955. 93	A	15	4. 30	10. 61	5½-4½	a ²H - v ²G°							
*1963. 00	A	15	4. 28	10. 56	4½-3½	(205)	1791. 51	A	2	4. 40	11. 29	3½-2½	b ²F - u ²D°
1949. 00	A	40	4. 28	10. 61	4½-4½		1786. 07	A	2	4. 39	11. 30	2½-1½	(224)

Cr II—Continued

Cr II—Continued

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2915.46	A	30	4.92	9.15	$4\frac{1}{2}-3\frac{1}{2}$	c $^2G-x ^2F^\circ$ (263)	Vac 1929.90	A	5	4.92	11.29	$3\frac{1}{2}-2\frac{1}{2}$	c $^2F-u ^2D^\circ$ (285)
2876.66	A	20	4.90	9.19	$3\frac{1}{2}-2\frac{1}{2}$	c $^2G-w ^4F^\circ$ (264)	1929.96	A	12	4.91	11.30	$2\frac{1}{2}-1\frac{1}{2}$	
2886.38	A	7	4.90	9.17	$3\frac{1}{2}-2\frac{1}{2}$	c $^2G-w ^4F^\circ$ (264)							
2865.87	A	50	4.92	9.22	$4\frac{1}{2}-5\frac{1}{2}$	c $^2G-x ^2H^\circ$ (265)	Air 2921.23	A	50	4.96	9.19	$6\frac{1}{2}-6\frac{1}{2}$	b $^2I-y ^2I^\circ$ (286)
2875.03	A	30	4.90	9.19	$3\frac{1}{2}-4\frac{1}{2}$		2923.67	A	40	4.97	9.19	$5\frac{1}{2}-5\frac{1}{2}$	
2923.46	A	30	4.90	9.19	$3\frac{1}{2}-4\frac{1}{2}$		*2897.24	A	10	4.96	9.22	$5\frac{1}{2}-6\frac{1}{2}$	
2778.06	A	70	4.92	9.36	$4\frac{1}{2}-4\frac{1}{2}$	c $^2G-w ^2G^\circ$ (266)	2876.30	A	40	4.96	9.25	$6\frac{1}{2}-7\frac{1}{2}$	b $^2I-z ^2K^\circ$ (288)
2774.44	A	50	4.90	9.35	$3\frac{1}{2}-3\frac{1}{2}$		*2896.45	A	40	4.97	9.23	$5\frac{1}{2}-6\frac{1}{2}$	
2785.32	A	2	4.92	9.35	$4\frac{1}{2}-3\frac{1}{2}$		2894.24	A	25	4.96	9.23	$6\frac{1}{2}-6\frac{1}{2}$	
2767.26	A	10	4.90	9.36	$3\frac{1}{2}-4\frac{1}{2}$								
*2697.90	A	30	4.92	9.49	$4\frac{1}{2}-3\frac{1}{2}$	c $^2G-w ^2F^\circ$ (267)	2710.92	A	65	4.96	9.52	$6\frac{1}{2}-5\frac{1}{2}$	b $^2I-w ^2H^\circ$ (289)
2679.89	A	15	4.90	9.50	$3\frac{1}{2}-2\frac{1}{2}$		2698.85	A	30	4.97	9.54	$5\frac{1}{2}-4\frac{1}{2}$	
2712.85	A	10	4.90	9.54	$3\frac{1}{2}-4\frac{1}{2}$		2712.85	A	10	4.97	9.52	$5\frac{1}{2}-5\frac{1}{2}$	
2613.51	A	12	4.90	9.62	$3\frac{1}{2}-2\frac{1}{2}$	c $^2G-x ^2D^\circ$ (269)							
2228.82	A	5	4.92	10.45	$4\frac{1}{2}-3\frac{1}{2}$	c $^2G-u ^2F^\circ$ (270)	2914.38	A	2	4.99	9.22	$0\frac{1}{2}-1\frac{1}{2}$	a $^2S-x ^4P^\circ$ (290)
2225.44	A	3	4.90	10.44	$3\frac{1}{2}-2\frac{1}{2}$		*2897.24	A	10	4.99	9.25	$0\frac{1}{2}-0\frac{1}{2}$	
2221.86	A	12	4.90	10.45	$3\frac{1}{2}-3\frac{1}{2}$								
*2167.81	A	3	4.92	10.61	$4\frac{1}{2}-4\frac{1}{2}$	c $^2G-v ^2G^\circ$ (271)	2891.87	A	20	4.99	9.26	$0\frac{1}{2}-1\frac{1}{2}$	a $^2S-u ^2P^\circ$ (291)
2178.46	A	3	4.90	10.56	$3\frac{1}{2}-3\frac{1}{2}$		2902.86	A	10	4.99	9.24	$0\frac{1}{2}-0\frac{1}{2}$	
Vac 1950.06	A	50	4.92	11.25	$4\frac{1}{2}-4\frac{1}{2}$	c $^2G-u ^2G^\circ$ (272)	2680.32	A	15	4.99	9.59	$0\frac{1}{2}-1\frac{1}{2}$	a $^2S-x ^2P^\circ$ (292)
1949.22	A	35	4.90	11.23	$3\frac{1}{2}-3\frac{1}{2}$		2675.74	A	15	4.99	9.60	$0\frac{1}{2}-0\frac{1}{2}$	a $^2S-w ^2P^\circ$ (293)
1932.64	A	5	4.90	11.29	$3\frac{1}{2}-2\frac{1}{2}$	c $^2G-u ^2D^\circ$ (273)							
Air 2919.93	A	2w	4.92	9.15	$3\frac{1}{2}-3\frac{1}{2}$	c $^2F-x ^2F^\circ$ (274)	2941.96	A	35	5.30	9.49	$2\frac{1}{2}-3\frac{1}{2}$	b $^2D-w ^2F^\circ$ (294)
2902.60	A	7	4.92	9.17	$3\frac{1}{2}-2\frac{1}{2}$	c $^2F-w ^4F^\circ$ (275)	2940.22	A	25	5.31	9.50	$1\frac{1}{2}-2\frac{1}{2}$	
*2895.02	A	18	4.91	9.17	$2\frac{1}{2}-1\frac{1}{2}$		2871.45	A	20	5.30	9.59	$2\frac{1}{2}-1\frac{1}{2}$	b $^2D-x ^2P^\circ$ (295)
2782.13	A	4	4.92	9.36	$3\frac{1}{2}-4\frac{1}{2}$	c $^2F-w ^2G^\circ$ (276)	2853.26	A	30	5.30	9.62	$2\frac{1}{2}-2\frac{1}{2}$	b $^2D-x ^2D^\circ$ (296)
2778.94	A	10	4.91	9.35	$2\frac{1}{2}-3\frac{1}{2}$		2846.32	A	25	5.31	9.64	$1\frac{1}{2}-1\frac{1}{2}$	
*2789.39	A	40	4.92	9.35	$3\frac{1}{2}-3\frac{1}{2}$		2594.32	A	7	5.30	10.05	$2\frac{1}{2}-3\frac{1}{2}$	b $^2D-v ^2F^\circ$ (297)
2701.75	A	12	4.92	9.49	$3\frac{1}{2}-3\frac{1}{2}$	c $^2F-w ^2F^\circ$ (277)	*2613.82 §§	A	3	5.31	10.03	$1\frac{1}{2}-2\frac{1}{2}$	
2684.09	A	8	4.91	9.50	$2\frac{1}{2}-2\frac{1}{2}$		2497.87	A	10	5.30	10.24	$2\frac{1}{2}-1\frac{1}{2}$	b $^2D-w ^2P^\circ$ (298)
*2693.87	A	7w	4.92	9.50	$3\frac{1}{2}-2\frac{1}{2}$		2507.57	A	10	5.31	10.23	$1\frac{1}{2}-0\frac{1}{2}$	
*2691.99	A	3w	4.91	9.49	$2\frac{1}{2}-3\frac{1}{2}$		2503.41	A	2	5.31	10.24	$1\frac{1}{2}-1\frac{1}{2}$	
2673.49	A	3	4.92	9.54	$3\frac{1}{2}-4\frac{1}{2}$	c $^2F-w ^2H^\circ$ (278)	2392.80	A	4	5.30	10.45	$2\frac{1}{2}-3\frac{1}{2}$	b $^2D-u ^2F^\circ$ (299)
2632.77	A	5	4.91	9.59	$2\frac{1}{2}-1\frac{1}{2}$	c $^2F-x ^2P^\circ$ (279)							
2626.78	A	20	4.92	9.62	$3\frac{1}{2}-2\frac{1}{2}$	c $^2F-x ^2D^\circ$ (280)	2992.59	A	7	5.47	9.59	$0\frac{1}{2}-1\frac{1}{2}$	b $^2S-x ^2P^\circ$ (300)
2605.63	A	15	4.91	9.64	$2\frac{1}{2}-1\frac{1}{2}$		2986.87	A	8	5.47	9.60	$0\frac{1}{2}-0\frac{1}{2}$	
2617.50	A	3w	4.91	9.62	$2\frac{1}{2}-2\frac{1}{2}$								
2465.78	A	18	4.92	9.93	$3\frac{1}{2}-2\frac{1}{2}$	c $^2F-w ^2D^\circ$ (281)	2589.05	A	15	5.47	10.24	$0\frac{1}{2}-1\frac{1}{2}$	b $^2S-w ^2P^\circ$ (301)
2465.61	A	18	4.91	9.91	$2\frac{1}{2}-1\frac{1}{2}$		2593.49	A	8	5.47	10.23	$0\frac{1}{2}-0\frac{1}{2}$	
2457.59	A	2	4.91	9.93	$2\frac{1}{2}-2\frac{1}{2}$								
2405.72	A	1	4.92	10.05	$3\frac{1}{2}-3\frac{1}{2}$	c $^2F-v ^2F^\circ$ (282)	2881.86	A	55	5.65	9.93	$2\frac{1}{2}-2\frac{1}{2}$	c $^2D-w ^2D^\circ$ (302)
2409.45	A	1	4.91	10.03	$2\frac{1}{2}-2\frac{1}{2}$		2887.77	A	20	5.64	9.91	$1\frac{1}{2}-1\frac{1}{2}$	
2417.31	A	2	4.92	10.03	$3\frac{1}{2}-2\frac{1}{2}$								
2231.45	A	15	4.92	10.45	$3\frac{1}{2}-3\frac{1}{2}$	c $^2F-u ^2F^\circ$ (283)	2800.16	A	20	5.65	10.05	$2\frac{1}{2}-3\frac{1}{2}$	c $^2D-v ^2F^\circ$ (303)
2228.34	A	15	4.91	10.44	$2\frac{1}{2}-2\frac{1}{2}$		2811.05	A	15	5.64	10.03	$1\frac{1}{2}-2\frac{1}{2}$	
2143.86	A	5	4.92	10.68	$3\frac{1}{2}-2\frac{1}{2}$	c $^2F-v ^2D^\circ$ (284)	2688.14	A	5	5.65	10.24	$2\frac{1}{2}-1\frac{1}{2}$	c $^2D-w ^2P^\circ$ (304)
2137.50	A	7	4.91	10.68	$2\frac{1}{2}-1\frac{1}{2}$		m2688.50	P	Cr II	5.64	10.23	$1\frac{1}{2}-0\frac{1}{2}$	
							2683.73	A	4	5.64	10.24	$1\frac{1}{2}-1\frac{1}{2}$	

Cr II—Continued

Cr II—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	E P		J	Multiplet (No.)	
			Low	High					Low	High			
Air							Air						
*2789.39	A	40	6.25	10.68	3½-2½	d ²F - g ²D°	2869.72	A	3wl	6.76	11.06	3½-3½	z ⁴D° - f ⁴D
2790.54	A	1	6.26	10.68	2½-1½	(327)	*2868.63	A	4wl	6.74	11.05	2½-2½	(332)
2790.94	A	5	6.26	10.68	2½-2½		2869.61	A	3wl	6.73	11.03	1½-1½	
2868.47	A						2868.47	A	2wl	6.72	11.02	0½-0½	
2452.71	A	18	6.25	11.29	3½-2½	d ²F - u ³D°	2771.89	A	20wl	6.76	11.22	3½-4½	z ⁴D° - e ⁴F
2446.11	A	10	6.26	11.30	2½-1½	(328)	2769.29	A	8wl	6.74	11.20	2½-3½	(333)
2453.90	A	1	6.26	11.29	2½-2½		2769.92	A	10wl	6.73	11.18	1½-2½	
							2769.70	A	3wl	6.72	11.17	0½-1½	
							2781.55	A	4wl	6.76	11.20	3½-3½	
							2776.00	A	3wl	6.73	11.17	1½-1½	
2661.22	A	50w	6.41	11.05	4½-5½	z ⁴F° - e ⁴G							
2663.28	A	30wl	6.39	11.03	3½-4½	(329)							
2666.58	A	30wl	6.38	11.01	2½-3½								
2667.89	A	25wl	6.37	10.99	1½-2½		2744.59	A	25	6.75	10.61	4½-4½	e ⁴G - v ⁴G
2674.26	A	7w	6.41	11.03	4½-4½		2735.76	A	12	6.72	10.56	3½-3½	(334)
2674.07	A	8w	6.39	11.01	3½-3½								
2673.97	A	8w	6.38	10.99	2½-2½								
2663.25	A	4wl	6.41	11.06	4½-3½	z ⁴F° - f ⁴D	2415.23	A	5W	7.90	13.01	6½-5½	z ⁴H° - f ⁴G
*2652.78	A	3wl	6.39	11.05	3½-2½	(330)	2408.02	A	3w	7.88	13.01	5½-4½	(335)
2654.02	A	4wl	6.38	11.03	2½-1½		2404.72	A	2w	7.88	13.01	5½-5½	
*2652.78	A	3wl	6.37	11.02	1½-0½								
2642.60	A	2w	6.39	11.06	3½-3½								
2569.40	A	15wl	6.41	11.22	4½-4½	z ⁴F° - e ⁴F	2517.36	A	20w	8.11	13.01	5½-5½	z ⁴G° - f ⁴G
2567.50	A	5w	6.39	11.20	3½-3½	(331)	2500.21	A	7w	8.07	13.01	4½-4½	(336)
*2568.51	A	20wl	6.38	11.18	2½-2½		2520.83	A	20wl	8.11	13.01	5½-4½	
2568.07	A	3w	6.37	11.17	1½-1½		2496.81	A	40wl	8.07	13.01	4½-5½	
*2577.74	A	10w	6.41	11.20	4½-3½								
2576.45	A	2w	6.39	11.18	3½-2½		*2632.54	A	15wl	{8.33 8.32}	13.01	4½-5½ 3½-4½	y ⁴F° - f ⁴G (337)

Strongest Unclassified Lines of Cr II

Air							Air					
2934.13	A	10					2587.42	A	35			
2913.50	A	10					2585.60	A	15			
2892.74	A	18					2584.83	A	10wl			
2885.29	A	10					2580.72	A	10			
2874.51	A	10					2555.47	A	75wl			
2854.14	A	20wd?					2547.50	A	20wl			
2839.23	A	12					2532.65	A	20w			
2827.95	A	15					2525.35	A	20wl			
2824.54	A	12					2524.55	A	15wl			
2808.02	A	20					2509.10	A	12wl			
2798.65	A	35					2502.16	A	12w			
2760.83	A	15					2496.60	A	15w			
2747.94	A	12					2494.26	A	10w			
2689.79	A	10					2493.08	A	15w			
2657.53	A	15wl					2490.75	A	25wl			
2652.00	A	30wl					2489.67	A	20wl			
2635.75	A	10w					2489.46	A	15w			
2634.27	A	12w					2488.30	A	12w			
2618.77	A	12w					2479.57	A	20wl			
2616.18	A	50wl					2478.78	A	20wl			
2614.57	A	50wl					2477.70	A	15wl			
2613.14	A	10wl					2477.00	A	12wl			
2603.00	A	10w					2474.90	A	20wl			
2596.03	A	25					2460.55	A	10w			
2590.37	A	20wl					2284.13	A	10			
							2193.11	A	10			

Cr III

IP 30.97 Anal B List C September 1951

REFERENCES

A T. L. Moore, Jr., unpublished material (Sept. 1951). W. L. I. T
 M. A. Catalán, unpublished material (March 1951). 1 P
 * and §§ = Blend Cr II and Cr III

Cr III

Cr III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1036.03	A	100	0.07	11.99	4-4	$a^3D - z^3D^\circ \dagger$	969.26	A	40	2.16	14.90	6-5	$a^3H - z^3G^\circ \dagger$
1037.80	A	20	0.04	11.94	3-3		967.59	A	10	2.15	14.91	5-4	
1040.17	A	30	0.07	11.94	4-3		966.28	A	8	2.13	14.91	4-3	
1041.34	A	15	0.04	11.90	3-2								
*1033.69	A	100	0.04	11.99	3-4								
1035.93	A	50	0.02	11.94	2-3								
1040.05	A	20	0.00	11.87	0-1								
1030.47	A	60	0.07	12.05	4-5	$a^3D - z^3F^\circ \dagger$	1279.91	A	20	2.29	11.94	4-3	$a^3F - z^3D^\circ \dagger$
1030.89	A	30	0.04	12.02	3-4	(2)	1284.09	A	20	2.29	11.90	3-2	
1033.23	A	50	0.07	12.02	4-4		1287.05	A	40	2.28	11.87	2-1	
1033.45	A	50	0.04	11.99	3-3		1264.21	A	35	2.29	12.06	4-3	$a^3F - z^3D^\circ \dagger$
*1033.69	A	100	0.02	11.96	2-2		1269.11	A	25	2.29	12.01	3-2	
1033.99	A	20	0.01	11.95	1-1		1271.85	A	20	2.28	11.98	2-1	
1035.77	A	20	0.07	11.99	4-3		1221.90	A	40	2.29	12.40	4-5	$a^3F - z^3G^\circ$
1035.57	A	25	0.04	11.96	3-2		1225.65	A	30	2.29	12.36	3-4	
1035.29	A	25	0.02	11.95	2-1		1228.65	A	30	2.28	12.33	2-3	
1027.46	A	10	0.04	12.06	3-3	$a^3D - z^3D^\circ \dagger$	1226.72	A	20	2.29	12.36	4-4	
1029.57	A	10	0.02	12.01	2-2	(3)	1239.58	A	15	2.29	12.33	3-3	
1028.33	A	30	0.01	12.01	1-2		1197.37	A	20	2.29	12.60	4-4	$a^3F - z^3F^\circ \dagger$
1030.10	A	20	0.00	11.98	0-1		1201.42	A	15	2.29	12.56	3-3	
924.07	A	20	0.07	13.43	4-3	$a^3D - z^3P^\circ \dagger$	1204.93	A	20	2.28	12.52	2-2	
925.03	A	20	0.04	13.39	3-2	(4)	1072.13	A	20	2.29	13.81	4-5	$a^3F - z^3G^\circ \dagger$
925.35	A	15	0.02	13.36	2-1		1073.74	A	20	2.29	13.78	3-4	
922.19	A	15	0.04	13.43	3-3		1076.15	A	20	2.28	13.75	2-3	
923.55	A	20	0.02	13.39	2-2		1066.28	A	50	2.29	13.87	4-4	$a^3F - z^3F^\circ \dagger$
924.32	A	20	0.01	13.36	1-1		1064.32	A	30	2.29	13.88	3-8	
							1064.48	A	30	2.28	13.88	2-2	
1268.01	A	25	2.20	11.94	2-3	$a^3P - z^3D^\circ$	*1065.12	A	15d?	{ 2.29	13.88	4-3	
1262.34	A	30	2.12	11.90	1-2	(5)				{ 2.29	13.88	3-2	
1259.80	A	20	2.07	11.87	0-1		1016.41	A	10	2.29	14.44	4-4	$a^3F - z^3P^\circ$
1273.31	A	15	2.20	11.90	2-2		1020.94	A	20	2.29	14.39	4-3	
1266.14	A	15	2.12	11.87	1-1		1021.84	A	15	2.29	14.37	3-2	
1252.61	A	50	2.20	12.06	2-3	$a^3P - z^3D^\circ$	999.84	A	20	2.29	14.64	4-3	$a^3F - z^3D^\circ \dagger$
1247.86	A	20	2.12	12.01	1-2	(6)	*1000.86	A	40d?	2.29	14.62	3-2	
1245.23	A	15	2.07	11.98	0-1								
1258.55	A	20	2.20	12.01	2-2		1259.02	A	40	2.59	12.40	5-5	$a^3G - z^3G^\circ \dagger$
1251.42	A	15	2.12	11.98	1-1		1261.86	A	40	2.57	12.36	4-4	
							1263.61	A	35	2.56	12.33	3-3	
1206.38	A	60	2.16	12.40	6-5	$a^3H - z^3D^\circ \dagger$	1232.96	A	50	2.59	12.60	5-4	$a^3G - z^3F^\circ$
1209.13	A	80	2.15	12.36	5-4	(7)	1236.20	A	40	2.57	12.56	4-3	
1211.12	A	80	2.13	12.33	4-3		1238.51	A	40	2.56	12.52	3-2	
1060.15	A	60	2.16	13.81	6-5	$a^3H - y^3D^\circ \dagger$	1230.80	A	20	2.57	12.60	4-4	
1061.04	A	60	2.15	13.78	5-4	(8)	1233.92	A	20	2.56	12.56	3-3	
1062.68	A	50	2.13	13.75	4-3		1117.19	A	30	2.59	13.64	5-6	$a^3G - z^3H^\circ$
1017.14	A	50	2.16	14.30	6-6	$a^3H - y^3H^\circ \dagger$	1122.43	A	15	2.57	13.57	4-5	
1017.57	A	50	2.15	14.28	5-5		1125.73	A	20	2.56	13.52	3-4	
1017.31	A	50	2.13	14.27	4-4		1100.61	A	30	2.59	13.81	5-5	$a^3G - y^3G^\circ \dagger$
*1000.86	A	40d?	2.13	14.47	4-5	$a^3H - z^3H^\circ$	1101.43	A	30	2.57	13.78	4-4	
						(10)	1102.88	A	30	2.56	13.75	3-3	

Cr III—Continued

Cr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1045.14	A	40	2.57	14.39	4-3	$a^3G - x^3F^\circ \dagger$	2141.15	A	100	6.22	11.99	5-4	$a^3F - z^3D^\circ \dagger$
1045.06	A	40	2.56	14.37	3-2	(24)	2144.15	A	80	6.18	11.94	4-3	(40)
1040.41	A	25	2.57	14.44	4-4		2147.16	A	50	6.15	11.90	3-2	
1040.53	A	40	2.59	14.46	5-4	$a^3G - y^1G^\circ \dagger$	2148.85	A	40	6.13	11.87	2-1	
						(25)	2159.73	A	20	6.11	11.82	1-0	
1002.96	A	30	2.59	14.90	5-5	$a^3G - x^3G^\circ \dagger$	2117.53	A	100	6.22	12.05	5-5	$a^3F - z^3F^\circ \dagger$
1001.04	A	40	2.57	14.91	4-4	(26)	*2114.87	A	100	6.18	12.02	4-4	(41)
999.37	A	20	2.56	14.91	3-3		2113.83	A	100	6.15	11.99	3-3	
927.16	A	20	2.59	15.91	5-4	$a^3G - w^3F^\circ$	2113.73	A	100	6.13	11.96	2-2	
926.52	A	15	2.57	15.90	4-3		2114.26	A	50	6.11	11.95	1-1	
925.49	A	15	2.56	15.89	3-2	(27)	2129.23	A	5	6.22	12.02	5-4	
							2125.62	A	15	6.18	11.99	4-3	
							2122.75	A	10	6.15	11.96	3-2	
							2120.35	A	25	6.13	11.95	2-1	
							2103.32	A	20	6.18	12.05	4-5	
							2103.22	A	20	6.15	12.02	3-4	
1309.34	A	20	3.18	12.60	3-4	$a^3D - z^3F^\circ \dagger$	2104.85	A	20	6.13	11.99	2-3	
1316.40	A	20	3.18	12.56	2-3	(28)	2107.68	A	20	6.11	11.96	1-2	
1322.83	A	10	3.19	12.52	1-2								
1154.12	A	15	3.18	13.87	3-4	$a^3D - y^3F^\circ$							
1153.60	A	15	3.18	13.88	2-3	(29)	2544.37	A	80	7.09	11.94	4-3	$c^3F - z^3D^\circ \dagger$
1155.39	A	15	3.19	13.88	1-2		2537.73	A	80	7.04	11.90	3-2	(42)
1113.26	A	10	3.18	14.26	3-3	$a^3D - y^3D^\circ \dagger$	2530.99	A	80	6.99	11.87	2-1	
1118.55	A	20	3.18	14.22	2-2	(30)	2483.06	A	100	7.09	12.06	4-3	$c^3F - z^3D^\circ \dagger$
1125.27	A	10	3.19	14.16	1-1		2479.77	A	100	7.04	12.01	3-2	(43)
1095.96	A	5	3.18	14.44	3-4	$a^3D - x^3F^\circ \dagger$	2472.88	A	100	6.99	11.98	2-1	
1101.91	A	15	3.18	14.39	2-3	(31)	2456.83	A	50	7.04	12.06	3-3	
1104.44	A	15	3.19	14.37	1-2		2458.98	A	30	6.99	12.01	2-2	
1076.74	A	20	3.18	14.64	3-3	$a^3D - w^3D^\circ \dagger$	2324.88	A	150	7.09	12.40	4-5	$c^3F - z^3G^\circ$
1079.43	A	15	3.18	14.62	2-2	(32)	2319.07	A	100	7.04	12.36	3-4	(44)
							*2314.63 §§	A	80d	6.99	12.33	2-3	
							2342.46	A	15	7.09	12.36	4-4	
							2333.09	A	25	7.04	12.33	3-3	
1315.00	A	10	5.07	14.46	3-4	$a^1F - y^1G^\circ$	2237.59	A	150	7.09	12.60	4-4	$c^3F - z^3F^\circ \dagger$
						(33)	2233.81	A	100	7.04	12.56	3-3	(45)
							2231.81	A	100	6.99	12.52	2-2	
1700.29	A	20	5.34	12.60	4-4	$b^3F - z^3F^\circ \dagger$	2255.44	A	15	7.09	12.56	4-3	
1711.63	A	20	5.35	12.56	3-3	(34)	2248.94	A	15	7.04	12.52	3-2	
1720.00	A	8	5.35	12.52	2-2								
1383.79	A	25	5.34	14.26	4-3	$b^3F - y^3D^\circ \dagger$	Vac						
1391.61	A	15	5.35	14.22	3-2	(35)	1837.05	A	10	7.09	13.81	4-5	$c^3F - y^3G^\circ$
*1400.34 §§	A	15	5.35	14.16	2-1		1829.72	A	10	7.04	13.78	3-4	(46)
							1827.26	A	30	6.99	13.75	2-3	
1357.20	A	15	5.34	14.44	4-4	$b^3F - x^3F^\circ \dagger$							
1365.94	A	7	5.35	14.39	3-3	(36)	Air						
1365.29	A	20	5.34	14.39	4-3		2203.22	A	100	7.83	13.43	3-3	$a^3P - z^3P^\circ$
1368.60	A	15	5.35	14.37	3-2		2207.46	A	40	7.80	13.39	2-2	(47)
1291.77	A	25	5.34	14.90	4-5	$b^3F - x^3G^\circ \dagger$	*2211.21	A	25	7.78	13.36	1-1	
1291.53	A	25	5.35	14.91	3-4		2219.58	A	40	7.83	13.39	3-2	
1290.93	A	20	5.35	14.91	2-3	(37)	2217.75	A	15	7.80	13.36	2-1	
							2191.24	A	40	7.80	13.43	2-3	
							*2200.98	A	20	7.78	13.39	1-2	
Air													
2073.36	A	15 H	6.11	12.06	2-3	$b^3P - z^3D^\circ$	2139.11	A	80	7.83	13.60	3-4	$a^3P - y^3D^\circ$
2066.18	A	15	6.04	12.01	1-2	(38)	2147.56	A	50	7.80	13.55	2-3	(48)
2069.00	A	20	6.02	11.98	0-1		2154.62	A	30	7.78	13.51	1-2	
2226.72	A	200	6.22	11.77	5-6	$a^3F - z^3G^\circ \dagger$	2159.08	A	40	7.83	13.55	3-3	
2235.91	A	200	6.18	11.70	4-5	(39)	2160.98	A	10	7.80	13.51	2-2	
2244.10	A	150	6.15	11.65	3-4		2163.86	A	50	7.78	13.49	1-1	
2251.45	A	80	6.13	11.61	2-3		2172.57	A	4	7.83	13.51	3-2	
*2257.92 §§	A	50d	6.11	11.58	1-2		2168.23	A	30	7.78	13.47	1-0	
2251.95	A	30	6.22	11.70	5-5								
2257.33	A	20	6.18	11.65	4-4		2001.94	A	25	7.83	13.99	3-2	$a^3P - z^3S^\circ \dagger$
2261.64	A	40	6.15	11.61	3-3							(49)	
2264.88	A	40	6.13	11.58	2-2		Vac						
							1992.72	A	25	7.80	13.99	2-2	

Cr III—Continued

Cr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High						Low	High			
Air														
*2257. 53	A	30d	8. 18	13. 64	5-6	b ³ G - z ³ H°	Air	2327. 67	A	20	8. 82	14. 12	5-4	a ¹ H - z ¹ G°
2276. 38	A	100	8. 15	13. 57	4-5	(50)								(62)
2290. 66	A	80	8. 13	13. 52	3-4									
2286. 55	A	15	8. 18	13. 57	5-5									
2297. 89	A	25	8. 15	13. 52	4-4									
2190. 76	A	100	8. 18	13. 81	5-5	b ³ G - y ³ G°	*2183. 71	A	50	8. 82	14. 47	5-5	a ¹ H - z ¹ H°	
2191. 58	A	100	8. 15	13. 78	4-4	(51)								
2197. 89	A	100	8. 13	13. 75	3-3									
*2200. 98	A	20	8. 18	13. 78	5-4									
2204. 57	A	30	8. 15	13. 75	4-3		2616. 50	A	80	8. 86	13. 57	5-5	b ³ H - z ³ H°	
2181. 41	A	15	8. 15	13. 81	4-5		2640. 73	A	100	8. 85	13. 52	4-4	(65)	
*2185. 01	A	100	8. 13	13. 78	3-4									
2166. 25	A	60	8. 18	13. 87	5-4	b ³ G - y ³ F°	2500. 27	A	40h	8. 87	13. 81	6-5	b ³ H - y ³ G°†	
2152. 76	A	50	8. 15	13. 88	4-3	(52)	2505. 04	A	10	8. 86	13. 78	5-4		
2149. 48	A	50	8. 13	13. 88	3-2		2488. 26	A	60	8. 85	13. 81	4-5		
2157. 17	A	100	8. 15	13. 87	4-4		2273. 30	A	100	8. 87	14. 30	6-6	b ³ H - y ³ H°†	
2146. 36	A	10	8. 13	13. 88	3-3		2275. 43	A	80	8. 86	14. 28	5-5	(67)	
2014. 68	A	20	8. 18	14. 30	5-6	b ³ G - y ³ H°†	2277. 47	A	80	8. 85	14. 27	4-4		
2013. 79	A	20	8. 15	14. 28	4-5	(53)								
2012. 28	A	12	8. 13	14. 27	3-4		2170. 70	A	100	8. 87	14. 56	6-7	b ³ H - z ³ I°	
							*2185. 01	A	100	8. 86	14. 50	5-6	(68)	
							2198. 62	A	100	8. 85	14. 46	4-5		
							*2201. 46	A	15	8. 86	14. 46	5-5		
2309. 99	A	50	8. 47	13. 81	4-5	c ¹ G - y ¹ G°	2047. 23	A	80	8. 87	14. 90	6-5	b ³ H - x ³ G°†	
*2183. 71	A	50	8. 47	14. 12	4-4	c ¹ G - z ¹ G°	2039. 63	A	50	8. 86	14. 91	5-4	(69)	
						(55)	2036. 39	A	60	8. 85	14. 91	4-3		
2060. 18	A	15	8. 47	14. 46	4-4	c ¹ G - y ¹ G°								
						(56)								
							2145. 62	A	12	10. 15	15. 91	4-4	d ³ F - w ³ F°†	
							2121. 69	A	30	10. 08	15. 90	3-3	(70)	
2545. 17	A	50	8. 68	13. 53	2-2	d ³ P - z ³ P°	2148. 65	A	50	10. 15	15. 90	4-3		
						(57)	2118. 65	A	20	10. 08	15. 91	3-4		
2208. 70	A	60	8. 68	14. 26	2-3	d ³ P - y ³ D°†								
2201. 93	A	20	8. 61	14. 22	1-2	(58)								
2211. 46	A	10	8. 58	14. 16	0-1		Vac							
							1707. 43	A	80	11. 77	19. 00	6-7		
							1701. 48	A	60	11. 70	18. 96	5-6		
							1696. 64	A	60	11. 65	18. 93	4-5		
2435. 32	A	30	8. 80	13. 87	3-4	b ³ D - y ³ F°†	1692. 89	A	60	11. 61	18. 90	3-4		
2413. 65	A	30	8. 76	13. 88	1-2	(59)	1690. 28	A	30	11. 58	18. 88	2-3		
2429. 75	A	30	8. 80	13. 88	3-3									
2190. 09	A	50	8. 80	14. 44	3-4	b ³ D - x ³ F°†	1679. 25	A	30	11. 77	19. 12	6-6	z ³ G° - e ³ G†	
*2201. 46	A	15	8. 76	14. 37	1-2	(60)								(72)
2114. 53	A	50	8. 80	14. 64	3-3	b ³ D - w ³ D°†	1588. 87	A	20	11. 77	19. 53	6-5	z ³ G° - f ³ F†	
2123. 53	A	80	8. 76	14. 57	1-1	(61)	1584. 60	A	40	11. 70	19. 49	5-4	(73)	
2122. 44	A	40	8. 80	14. 62	3-2		1580. 73	A	20	11. 65	19. 46	4-3		
2131. 95	A	20	8. 79	14. 57	2-1		1577. 14	A	10	11. 61	19. 44	3-2		

Strongest Unclassified Lines of Cr III

Air							Air				
2916. 57	A	40H					2217. 51	A	40		
2655. 28	A	40						Vac			
2647. 50	A	50					1766. 92	A	30		
2628. 08	A	100					1707. 78	A	40		
2577. 96	A	40					1603. 19	A	30		
2564. 76	A	80					1231. 88	A	30		
2506. 41	A	80					1221. 07	A	40		
2404. 72	A	40									
2340. 51	A	60					1187. 65	A	30		
2295. 55	A	60					1161. 43	A	50		
2289. 23	A	50					1136. 67	A	50		
2284. 44	A	150					1068. 41	A	80		
2256. 64	A	40					1059. 13	A	60		
2247. 64	A	40									
2218. 69	A	40					1057. 85	A	30		
							1055. 89	A	40		

Cr IV

I P 49.4? Anal C List C September 1951

REFERENCE

A F. L. Moore, Jr., unpublished material (May 1951). W L, I, T, I P

Cr IV

Cr IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
620. 92	A	10	0. 12	19. 69	4½ - 5½	a 4F - z 4G°	706. 00	A	50	2. 55	20. 04	2½ - 2½	a 3D - z 3D°†
632. 60	A	30	0. 07	19. 58	3½ - 4½								
634. 13	A	20	0. 03	19. 50	2½ - 3½								
635. 45	A	10	0. 00	19. 43	1½ - 2½								
628. 97	A	100	0. 12	19. 74	4½ - 4½	a 4F - z 4F°†	693. 93	A	100	2. 63	20. 42	5½ - 4½	a 3H - z 3G°†
629. 73	A	50	0. 07	19. 67	3½ - 3½	(2)	695. 22	A	50	2. 60	20. 36	4½ - 3½	(9)
630. 28	A	80	0. 03	19. 62	2½ - 2½		638. 12	A	50	2. 63	21. 98	5½ - 4½	a 3H - y 3G°†
630. 77	A	20	0. 00	19. 57	1½ - 1½		637. 54	A	50	2. 60	21. 96	4½ - 3½	(10)
627. 70	A	10	0. 07	19. 74	3½ - 4½								
628. 46	A	20	0. 03	19. 67	2½ - 3½								
620. 65	A	100	0. 12	20. 01	4½ - 3½	a 4F - z 4D°†	1840. 10	A	100	12. 98	19. 69	4½ - 5½	b 4F - z 4G°†
621. 33	A	60	0. 07	19. 94	3½ - 2½	(3)	1851. 82	A	50	12. 92	19. 58	3½ - 4½	(11)
622. 07	A	40	0. 03	19. 88	2½ - 1½		1862. 99	A	100	12. 87	19. 50	2½ - 3½	
618. 22	A	40	0. 07	20. 04	3½ - 2½	a 4F - z 3D°	1873. 86	A	25	12. 84	19. 43	1½ - 2½	
619. 12	A	40	0. 03	19. 97	2½ - 1½	(4)	1826. 16	A	30	12. 98	19. 74	4½ - 4½	b 4F - z 4F°†
617. 05	A	20	0. 03	20. 04	2½ - 2½		1827. 39	A	10	12. 92	19. 67	3½ - 3½	(12)
677. 54	A	40	1. 79	20. 01	2½ - 3½	a 3P - z 4D°	1830. 29	A	10	12. 87	19. 62	2½ - 2½	
678. 91	A	20	1. 75	19. 94	1½ - 2½	(5)	1833. 79	A	15	12. 84	19. 57	1½ - 1½	
680. 62	A	8	1. 74	19. 88	0½ - 1½		1755. 65	A	20	12. 98	20. 01	4½ - 3½	b 4F - z 4D°†
680. 15	A	20	1. 79	19. 94	2½ - 2½		1758. 54	A	20	12. 92	19. 94	3½ - 2½	(13)
687. 13	A	40	1. 90	19. 87	4½ - 3½	a 3G - z 4F°	1739. 22	A	50	12. 87	19. 97	2½ - 1½	b 4F - z 3D°†
688. 47	A	50	1. 86	19. 79	3½ - 2½	(6)	1731. 22	A	20	12. 84	19. 97	1½ - 1½	(14)
666. 5g	A	100	1. 90	20. 42	4½ - 4½	a 3G - z 3G°†	1990. 22	A	40	13. 67	19. 87	3½ - 3½	b 3F - z 3F°†
667. 31	A	75	1. 86	20. 36	3½ - 3½	(7)	1985. 58	A	15	13. 57	19. 79	2½ - 2½	(15)
							1826. 81	A	30	13. 67	20. 42	3½ - 4½	b 3F - z 3G°
							1819. 18	A	60	13. 57	20. 36	2½ - 3½	(16)

MANGANESE, Z=25

Mn I

I P 7.40 Anal A List B November 1951

REFERENCE

A M. A. Catalán and Olga García-Riquelme, unpublished material (November 1951). W L, I, T, I P

Mn I

Mn I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2794. 817	A	10R	0.00	4.42	2½-3½	a "S -y "P° (1)	2782. 711	A	50h	2.11	6.54	4½-	a "D -z "F° (7)
2798. 270	A	8R	0.00	4.41	2½-2½		2813. 989	A	12h	2.15	6.54	2½-	
2801. 084	A	6	0.00	4.41	2½-1½		2828. 762	A	6h	2.18	6.54	0½-	
2384. 049	A	40R	0.00	5.18	2½-3½	a "S -z "D° (2)	2771. 430	A	30	2.11	6.56	4½-3½	a "D -y "D° (8)
2377. 183	A	30R	0.00	5.19	2½-2½		2790. 353	A	30	2.13	6.56	3½-2½	
2372. 116	A	10d	0.00	5.20	2½-1½		2804. 095	A	20	2.15	6.56	2½-1½	
2930. 245	A	20	2.11	6.32	4½-5½	a "D -x "F°† (3)	2813. 481	A	20?	2.17	6.56	1½-0½	
2956. 101	A	20	2.13	6.31	3½-4½		2789. 192	A	25	2.13	6.56	3½-3½	
2978. 566	A	15	2.15	6.30	2½-3½		2818. 919	A	10	2.18	6.56	0½-0½	
2996. 470	A	10	2.17	6.29	1½-2½		2802. 454	A	10?	2.15	6.56	2½-3½	
3008. 822	A	4	2.18	6.28	0½-1½		2812. 840	A	20?	2.17	6.56	1½-2½	
2936. 156	A	10	2.11	6.31	4½-4½		2818. 770	A	20	2.18	6.56	0½-1½	
2963. 606	A	20	2.13	6.30	3½-3½		2760. 920	A	100h	2.11	6.58	4½-3½	a "D -t "P° (9)
2985. 992	A	20	2.15	6.29	2½-2½		2776. 218	A	80h	2.13	6.58	3½-2½	
3002. 616	A	20	2.17	6.28	1½-1½		2787. 813	A	15h	2.15	6.58	2½-1½	
3012. 854	A	8	2.18	6.27	0½-0½		2778. 544	A	60h	2.13	6.58	3½-3½	
2941. 681	A	5	2.17	6.36	1½-0½	a "D -x "P° (4)	2789. 355	A	15hw	2.15	6.58	2½-2½	
2953. 008	A	10	2.15	6.33	2½-2½		2796. 938	A	5?	2.17	6.58	1½-1½	
2950. 979	A	3	2.17	6.35	1½-1½		2791. 707	A	2h	2.15	6.58	2½-3½	
2947. 634	A	3	2.18	6.36	0½-0½		2940. 331	A	400Hw	2.31	6.51	4½-	z "P° -f "D (10)
2963. 250	A	10	2.17	6.33	1½-2½		2925. 58	A	500hw	2.29	6.51	3½-	
2956. 971	A	10	2.18	6.35	0½-1½		2914. 599	A	600Hw	2.27	6.51	2½-	
2839. 997	A	15	2.11	6.45	4½-3½	a "D -u "P° (5)	2726. 13	A	100Hw	2.31	6.84	4½-	z "P° -g "D (11)
2868. 880	A	7	2.13	6.44	3½-2½		2713. 320	A	100Hv	2.29	6.84	3½-	
m2892. 382	P	Mn II	2.15	6.42	2½-1½		2703. 840	A	40Hv	2.27	6.84	2½-	
2858. 655	A	30	2.13	6.45	3½-3½		2584. 302	A	100R	2.31	7.08	4½-4½	z "P° -e "P (12)
2882. 899	A	20	2.15	6.44	2½-2½		2584. 100	A	10	2.29	7.06	3½-3½	
*2902. 203	A	25	2.17	6.42	1½-1½		2505. 763	A	80R	2.31	7.06	4½-3½	
2872. 583	A	30	2.15	6.45	2½-3½		2592. 944	A	60R	2.29	7.05	3½-2½	
2892. 657	A	20	2.17	6.44	1½-2½		2572. 755	A	50R	2.29	7.08	3½-4½	
2907. 993	A	15	2.18	6.42	0½-1½		2575. 509	A	20R	2.27	7.06	2½-3½	
2799. 841	A	50	2.11	6.51	4½-4½	a "D -x "D° (6)	2779. 993	A	40	2.88	7.32	3½-4½	a "D -w "F°† (13)
2809. 103	A	25	2.13	6.53	3½-3½		2797. 094	A	5	2.91	7.32	2½-3½	
*2821. 452	A	20	2.15	6.53	2½-2½		2804. 929	A	6	2.93	7.33	1½-2½	
*2830. 793	A	20	2.17	6.53	1½-1½		2808. 385	A	8	2.94	7.33	0½-1½	
2791. 085	A	20	2.11	6.53	4½-3½		2773. 659	A	10	2.88	7.33	3½-3½	a "D -v "D°† (14)
2808. 015	A	20	2.13	6.53	3½-2½		2773. 021	A	5	2.91	7.36	2½-2½	
*2821. 452	A	20	2.15	6.53	2½-1½		2655. 787	A	15	2.88	7.52	3½-4½	a "D -y "G°† (15)
2817. 969	A	30	2.13	6.51	3½-4½		2676. 326	A	10	2.91	7.52	2½-3½	
2822. 549	A	30	2.15	6.53	2½-3½								
*2830. 793	A	20	2.17	6.53	1½-2½								
2836. 310	A	20	2.18	6.53	0½-1½								

Mn I—Continued

Mn I—Continued

Strongest Unclassified Lines of Mn I

Mn II

I P 15.57 Anal A List B September 1951

REFERENCE

A C. W. Curtis, Phys. Rev. 53, 474 (1938) and J. Opt. Soc. Am., 42, 300 (1952). W L, I, T, I P

Mn II

Mn II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2576. 107†	A	400	0.00	4.79	3-4	a ⁷ S -z ³ P° (1)	1853. 271	A	25	1.77	8.43		a ⁵ D -y ⁵ P°† (12)
2593. 731	A	300	0.00	4.76	3-3		1857. 918	A	20	1.80	8.45		
2605. 697	A	1000	0.00	4.74	3-2		1861. 663	A	10	1.82	8.46		
2305. 001	A	8	0.00	5.35	3-3	a ⁷ S -z ³ P° (2)	1862. 517	A	10	1.80	8.43		
2298. 954	A	3	0.00	5.37	3-2		1864. 403	A	10	1.82	8.45	1-1	
1865. 831	A						1865. 831	A	10	1.84	8.46		
Vac													
1197. 172	A	40	0.00	10.31	3-4	a ⁷ S -y ³ P° (3)	1733. 557	A	15	1.77	8.89	4-4	a ⁵ D -y ⁵ D°† (13)
1199. 388	A	25	0.00	10.29	3-3		1734. 491	A	12	1.80	8.92	3-3	
1201. 124	A	20	0.00	10.28	3-2		1738. 349	A	4	1.82	8.93	2-2	
1162. 017	A	50	0.00	10.62	3-4	a ⁷ S -x ³ P° (4)	1377. 938	A	15	1.77	10.73	4-3	a ⁵ D -w ⁵ P°† (14)
1163. 325	A	40	0.00	10.61	3-3		1382. 298	A	10	1.80	10.73	3-2	
1164. 211	A	30	0.00	10.60	3-2		1383. 055	A	4	1.80	10.73	3-3	
1385. 892	A						1385. 892	A	10	1.82	10.73	2-2	
Air													
2949. 201	A	1000	1.17	5.35	2-3	a ⁵ S -z ³ P° (5)	1188. 502	A	50	1.77	12.16	4-5	a ⁵ D -x ⁵ F° (15)
2939. 302	A	800	1.17	5.37	2-2		1192. 313	A	40	1.80	12.16	3-4	
2933. 051	A	500	1.17	5.38	2-1		1194. 998	A	30	1.82	12.16	2-3	
1196. 724	A						1196. 724	A	25	1.84	12.16	1-2	
1197. 570	A						1197. 570	A	10	1.85	12.16	0-1	
Vac													
1291. 584	A	10	1.17	10.73	2-3	a ⁵ S -w ⁵ P° (6)	1062. 507	A	30	1.77	13.39	4-5	a ⁵ D -v ⁵ F° (16)
1290. 926	A	10	1.17	10.73	2-2		1065. 564	A	25	1.80	13.39	3-4	
1290. 525	A	8	1.17	10.74	2-1		1067. 729	A	23	1.82	13.39	2-3	
1023. 546	A	20	1.17	13.23	2-3	a ⁵ S -u ⁵ P° (7)	1069. 110	A	20	1.84	13.39	1-2	
1027. 995	A	18	1.17	13.18	2-2		1069. 775	A	10	1.85	13.39	0-1	
1030. 866	A	10	1.17	13.14	2-1		1003. 012	A	22	1.77	14.08	4-5	a ⁵ D -r ⁵ F° (17)
1000. 956	A	25	1.17	13.50	2-3	a ⁵ S -t ⁵ P° (8)	1005. 714	A	22	1.80	14.08	3-4	
1005. 019	A	20	1.17	13.45	2-2		1007. 622	A	15	1.82	14.08	2-3	
1007. 530	A	15	1.17	13.42	2-1		1008. 859	A	12	1.84	14.08	1-2	
1009. 463	A						1009. 463	A	10	1.85	14.08	0-1	
Air													
982. 901	A	25	1.17	13.73	2-3	a ⁵ S -s ⁵ P° (9)	2701. 693	A	250	3.40	7.97	6-6	a ⁵ G -z ⁵ G°† (18)
983. 240	A	20	1.17	13.73	2-2		2705. 727	A	150	3.40	7.96	5-5	
983. 403	A	15	1.17	13.72	2-1		2708. 445	A	100	3.41	7.96	4-4	
1915. 095	A	30	1.77	8.21	4-5	a ⁵ D -z ³ F°† (10)	2710. 332	A	100	3.41	7.96	3-3	
1921. 245	A	25	1.80	8.23	3-4		2711. 632	A	80	3.41	7.96	2-2	
1926. 579	A	15	1.82	8.23	2-3		2703. 977	A	40	3.40	7.96	6-5	
1931. 408	A	10	1.84	8.23	1-2		2707. 542	A	40	3.40	7.96	5-4	
1911. 395	A	12	1.77	8.23	4-4		2709. 969	A	30	3.41	7.96	4-3	
1919. 639	A	7	1.80	8.23	3-3		2711. 566	A	100	3.41	7.96	3-2	
1926. 938	A	9	1.82	8.23	2-2		2610. 202	A	200	3.40	8.13	6-7	
1907. 838	A	8	1.80	8.27	3-3	a ⁵ D -z ⁵ D°† (11)	2618. 142	A	200	3.40	8.12	5-6	a ⁵ G -z ⁵ H° (19)
1918. 638	A	6	1.82	8.26	2-2		2625. 606	A	200u	3.41	8.11	4-5	
1923. 341	A	10	1.84	8.26	1-1		2632. 353	A	200	3.41	8.09	3-4	
1914. 676	A	12	1.82	8.27	2-3		2638. 173	A	200	3.41	8.08	2-3	
1923. 059	A	10	1.84	8.26	1-2		2616. 506	A	30	3.40	8.12	6-6	
1925. 556	A	10	1.85	8.26	0-1		2624. 760	A	10	3.40	8.11	5-5	
							2632. 011	A	15	3.41	8.09	4-4	
							2638. 127	A	(3)	3.41	8.08	3-3	

Mn II—Continued

Mn II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air													
2563. 640	A	200	3. 40	8. 21	6-5	$a^6G - z^6F^\circ \dagger$	1111. 898	A	10	3. 40	14. 50	6-5	$a^6G - p^6F^\circ \dagger$
2558. 604	A	200u	3. 40	8. 23	5-4		1113. 232	A	9	3. 40	14. 49	5-4	
2556. 572	A	100u	3. 41	8. 23	4-3		1114. 437	A	8	3. 41	14. 48	4-3	
2557. 540	A	60u	3. 41	8. 23	3-2								
2559. 677	A	10u	3. 41	8. 23	2-1								
2565. 219	A	100	3. 40	8. 21	5-5								
2559. 415	A	30	3. 41	8. 23	4-4								
2556. 803	A	40u	3. 41	8. 23	3-3								
2557. 596	A	(5)	3. 41	8. 23	2-2								
2566. 034	A	8u	3. 41	8. 21	4-5								
2559. 745	A	10u	3. 41	8. 23	3-4								
2516. 597	A	8	3. 40	8. 31	5-4	$a^6G - z^6D^\circ \dagger$	*2722. 095	A	60	3. 70	8. 23	1-2	$a^6P - z^6F^\circ \dagger$
2535. 657	A	15	3. 41	8. 27	4-3		2716. 795	A	40	3. 69	8. 23	3-3	
2542. 922	A	30u	3. 41	8. 26	3-2		2724. 462	A	50	3. 70	8. 23	1-1	
2543. 458	A	30u	3. 41	8. 26	2-1		2717. 525	A	30	3. 69	8. 23	3-2	
2541. 113	A	30u	3. 41	8. 26	3-2	$a^6G - z^6S^\circ \dagger$	*2722. 095	A	60	3. 69	8. 23	2-1	
Vac													
*1236. 148	A	25	3. 40	13. 39	6-5	$a^6G - v^6F^\circ$	2672. 581	A	200	3. 69	8. 31	3-4	$a^6P - z^6D^\circ \dagger$
1236. 545	A	15	3. 40	13. 39	5-4		2695. 363	A	30	3. 69	8. 27	2-3	
1236. 770	A	20	3. 41	13. 39	4-3		2705. 557	A	10?	3. 70	8. 26	1-2	
*1236. 873	A	20	{3. 41	13. 39	3-2		2698. 984	A	25	3. 69	8. 26	3-2	$a^6P - z^6S^\circ \dagger$
			{3. 41	13. 39	2-1		2701. 168	A	40	3. 69	8. 26	2-2	
1233. 952	A	30	3. 40	13. 41	6-6	$a^6G - y^6G^\circ \dagger$	2603. 721	A	20	3. 69	8. 43	3-3	$a^6P - y^6P^\circ \dagger$
1234. 872	A	25	3. 40	13. 40	5-5		2594. 734	A	15	3. 69	8. 45	3-2	
1235. 463	A	25	3. 41	13. 40	4-4		2591. 432	A	10	3. 69	8. 46	2-1	
1235. 869	A	25	3. 41	13. 39	3-3		*2598. 899	A	20	3. 70	8. 45	1-2	
*1236. 148	A	25	3. 41	13. 39	2-2		2408. 853	A	15u	3. 69	8. 81	3-3	$a^6P - x^6P^\circ \dagger$
1234. 507	A	8	3. 40	13. 40	6-5		2412. 735	A	10u	3. 69	8. 80	3-2	
1235. 273	A	10	3. 40	13. 40	5-4		2417. 939	A	10u	3. 69	8. 80	2-1	
1235. 793	A	10	3. 41	13. 39	4-3		2410. 584	A	25u	3. 69	8. 81	2-3	
1222. 785	A	30	3. 40	13. 50	6-5	$a^6G - u^6F^\circ \dagger$	2416. 344	A	25u	3. 70	8. 80	1-2	
1224. 733	A	28	3. 40	13. 48	5-4		2373. 358	A	50u	3. 69	8. 89	3-4	$a^6P - y^6D^\circ \dagger$
1226. 397	A	25d?	3. 41	13. 47	4-3		2360. 096	A	10	3. 69	8. 92	3-3	
1227. 638	A	23	3. 41	13. 46	3-2		2358. 447	A	15	3. 69	8. 93	2-2	
1228. 423	A	20	3. 41	13. 46	2-1		2359. 456	A	8	3. 70	8. 93	1-1	
1199. 341	A	40	3. 40	13. 69	6-7	$a^6G - y^6H^\circ \dagger$							
1201. 570	A	40	3. 40	13. 68	5-6								
1203. 252	A	30	3. 41	13. 66	4-5								
1204. 619	A	25	3. 41	13. 65	3-4								
1205. 423	A	20	3. 41	13. 65	2-3								
1195. 973	A	30	3. 40	13. 72	6-5	$a^6G - t^6F^\circ$	1258. 028	A	15	3. 69	13. 50	3-3	$a^6P - t^6P^\circ \dagger$
*1196. 333	A	25	3. 40	13. 72	5-4		1264. 447	A	12	3. 69	13. 45	3-2	
1197. 14	P	Mn II	3. 41	13. 72	4-3		1268. 905	A	10	3. 69	13. 42	2-1	
1197. 996	A	10	3. 41	13. 71	3-2		1258. 514	A	15	3. 69	13. 50	2-3	
1198. 630	A	10	3. 41	13. 71	2-1		1265. 387	A	10d?	3. 70	13. 45	1-2	
*1196. 333	A	25	3. 40	13. 72	5-5								
1196. 517	A	20	3. 41	13. 72	4-4								
1165. 823	A	25	3. 40	13. 99	6-6	$a^6G - x^6G^\circ \dagger$	1254. 410	A	15	3. 69	13. 53	3-4	$a^6P - x^6D^\circ \dagger$
1167. 130	A	20	3. 40	13. 98	5-5		1256. 957	A	10	3. 69	13. 51	2-3	
1168. 254	A	15	3. 41	13. 97	4-4		1259. 561	A	8	3. 70	13. 50	1-2	
1169. 280	A	15	3. 41	13. 96	3-3		1256. 468	A	8	3. 69	13. 51	3-3	
1169. 531	A	15	3. 41	13. 96	2-2		1259. 046	A	12	3. 69	13. 50	2-2	
1166. 157	A	10	3. 40	13. 99	5-6		1261. 282	A	8	3. 70	13. 49	1-1	
1161. 295	A	20	3. 40	14. 03	6-5	$a^6G - s^6F^\circ \dagger$	1241. 626	A	10	3. 69	13. 63	3-4	$a^6P - w^6D^\circ \dagger$
1161. 764	A	20	3. 40	14. 03	5-4		1245. 551	A	15	3. 69	13. 60	2-3	
							1247. 659	A	15	3. 69	13. 59	2-2	
1156. 345	A	30	3. 40	14. 08	6-5	$a^6G - r^6F^\circ$	1229. 653	A	25	3. 69	13. 73	3-3	$a^6P - s^6P^\circ \dagger$
1156. 658	A	25	3. 40	14. 08	5-4		1230. 152	A	15	3. 69	13. 73	3-2	
1156. 834	A	20	3. 41	14. 08	4-3		1230. 873	A	10	3. 69	13. 72	2-1	
*1156. 900	A	20	{3. 41	14. 08	3-2		1230. 106	A	20	3. 69	13. 73	2-3	
			{3. 41	14. 08	2-1		1231. 101	A	8	3. 70	13. 73	1-2	

Mn II—Continued

Mn II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2685. 882	A	30	3. 77	8. 36	6-6	a ³ H -z ³ H°† (44)	2548. 749	A	50u	4. 05	8. 89	4-4	b ⁴ D -y ⁴ D°† (55)
2689. 787	A	20	3. 79	8. 38	5-5		2537. 921	A	40	4. 06	8. 92	3-3	
2693. 564	A	15	3. 80	8. 38	4-4		2534. 219	A	20	4. 06	8. 93	2-2	
							2534. 097	A	10	4. 06	8. 93	3-2	
2490. 003	A	40u	3. 77	8. 71	6-5	a ³ H -z ³ G°† (45)	2533. 329	A	10	4. 06	8. 93	2-1	
2507. 598	A	50u	3. 79	8. 71	5-4		2531. 795	A	15	4. 05	8. 93	1-0	
2516. 741	A	20	3. 80	8. 71	4-3		2553. 266	A	50	4. 06	8. 89	3-4	
							2538. 044	A	20	4. 06	8. 92	2-3	
							2532. 779	A	20	4. 05	8. 93	1-2	
							2530. 719	A	30	4. 05	8. 93	0-1	
2751. 123	A	30	3. 89	8. 38	4-4	a ³ F -z ³ F°† (46)	Vac						
2765. 431	A	13	3. 91	8. 37	3-3		1305. 628	A	15	4. 05	13. 50	4-3	b ⁴ D -t ³ P°† (56)
2776. 525	A	10u	3. 92	8. 37	2-2		*1313. 766	A	10	4. 06	13. 45	3-2	
							1306. 814	A	10	4. 06	13. 50	3-3	
2548. 255	A	8u	3. 89	8. 73	4-3	a ³ F -z ³ D°† (47)	*1313. 766	A	10	4. 06	13. 45	2-2	
2545. 160	A	30u	3. 91	8. 76	3-2		1287. 978	A	15	4. 05	13. 63	4-4	b ⁴ D -w ⁴ D°† (57)
2542. 651	A	8u	3. 92	8. 77	2-1		*1292. 866	A	15	4. 06	13. 60	3-3	
							*1295. 150	A	10	4. 06	13. 59	3-2	
2387. 004	A	15u	3. 89	9. 06	4-3	a ³ F -y ³ D°† (48)	1289. 132	A	15	4. 06	13. 63	3-4	
2395. 387	A	10u	3. 91	9. 06	3-2		*1292. 866	A	15	4. 06	13. 60	2-3	
2401. 717	A	10u	3. 92	9. 06	2-1		1294. 803	A	10	4. 05	13. 59	1-2	
							*1275. 973	A	40	4. 05	13. 72	4-5	b ⁴ D -t ³ F°† (58)
2961. 688	A	20	4. 05	8. 21	4-5	b ⁴ D -z ⁴ F°† (49)	*1277. 120	A	20d?	4. 06	13. 72	3-4	
*2958. 939	A	20	4. 06	8. 23	3-4		*1277. 817	A	20	4. 06	13. 72	2-3	
2952. 873	A	10	4. 05	8. 23	4-4		*1275. 973	A	40	4. 05	13. 72	4-4	
2955. 126	A	10	4. 06	8. 23	3-3		*1277. 817	A	20	4. 06	13. 72	3-3	
2956. 166	A	10	4. 06	8. 23	2-2		1278. 749	A	15	4. 06	13. 71	2-2	
2956. 978	A	15	4. 05	8. 23	1-1		1279. 089	A	10	4. 05	13. 71	1-1	
2956. 006	A	10	4. 06	8. 23	3-2		1275. 102	A	20	4. 05	13. 73	4-3	b ⁴ D -s ³ P°† (59)
*2958. 939	A	20	4. 06	8. 23	2-1		*1276. 772	A	10d?	4. 06	13. 73	3-2	
2897. 066	A	40	4. 05	8. 31	4-4	b ⁴ D -z ⁴ D°† (50)	*1277. 120	A	20d?	4. 06	13. 72	2-1	
2927. 231	A	15	4. 06	8. 27	3-3		*1276. 238	A	20	4. 06	13. 73	3-3	
2902. 899	A	25	4. 06	8. 31	3-4		*1276. 772	A	10d?	4. 06	13. 73	2-2	
2927. 394	A	20	4. 06	8. 27	2-3		*1276. 238	A	20	4. 06	13. 73	3-3	
2934. 724	A	10	4. 05	8. 26	1-2		*1276. 772	A	10d?	4. 06	13. 73	2-2	
2816. 327	A	20	4. 05	8. 43	4-3	b ⁴ D -y ⁴ P°† (51)	*1276. 238	A	20	4. 06	13. 73	2-3	
2811. 283	A	15	4. 06	8. 45	3-2		Air						
2805. 207	A	15	4. 06	8. 46	2-1		2889. 605	A	120	4. 09	8. 36	5-6	a ³ G -z ³ H°† (60)
2811. 434	A	10	4. 06	8. 45	2-2		2889. 528	A	100	4. 10	8. 38	4-5	
2803. 443	A	10	4. 05	8. 46	1-1		2886. 670	A	100	4. 11	8. 38	3-4	
							2879. 485	A	100u	4. 09	8. 38	5-4	a ³ G -z ³ F°† (61)
2639. 850	A	20	4. 05	8. 72	4-5	b ⁴ D -y ⁴ F°† (52)	2892. 385	A	60	4. 10	8. 37	4-3	
2655. 920	A	100	4. 06	8. 70	3-4		2898. 703	A	60	4. 11	8. 37	3-2	
*2667. 033	A	25	4. 06	8. 68	2-3		2887. 882	A	10	4. 10	8. 38	4-4	
2673. 381	A	50	4. 05	8. 67	1-2		2894. 905	A	10	4. 11	8. 37	3-3	
2677. 851	A	30	4. 05	8. 66	0-1		2665. 178	A	15u	4. 09	8. 72	5-5	a ³ G -y ⁴ F°† (62)
2651. 039	A	(2)	4. 05	8. 70	4-4		2683. 835	A	15	4. 10	8. 70	4-4	
2666. 893	A	10	4. 06	8. 68	3-3		2685. 987	A	10	4. 11	8. 70	3-4	
2674. 987	A	15	4. 06	8. 67	2-2		2674. 442	A	50	4. 09	8. 71	5-5	a ³ G -z ³ G°† (63)
2679. 165	A	30	4. 05	8. 66	1-1		2680. 336	A	40u	4. 10	8. 71	4-4	
							2684. 539	A	50	4. 11	8. 71	3-3	
2648. 941	A	20	4. 05	8. 71	4-5	b ⁴ D -z ⁴ G°† (53)	2466. 216	A	20	4. 09	9. 10	5-4	a ³ G -y ⁴ F°† (64)
2652. 496	A	160	4. 06	8. 71	3-4		2466. 417	A	10	4. 10	9. 11	4-3	
2647. 626	A	10u	4. 05	8. 71	4-4		2467. 979	A	10	4. 11	9. 11	3-2	
*2589. 726	A	25	4. 05	8. 81	4-3	b ⁴ D -x ⁴ P°† (54)							
*2598. 899	A	20	4. 06	8. 80	3-2								
2603. 036	A	15	4. 06	8. 80	2-1								
2594. 400	A	10	4. 06	8. 81	3-3								
2599. 036	A	10	4. 06	8. 80	2-2								
2601. 521	A	20	4. 05	8. 80	1-1								
2600. 283	A	8	4. 05	8. 80	0-1								

Mn II—Continued

Mn II—Continued

Mn II—Continued

Mn II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1417. 949	A	10	5. 35	14. 06	3-2	<i>z</i> $^3P^o - h$ $^4S^\dagger$ (93)	2707. 917	A	20	7. 97	12. 53	6-6	<i>z</i> $^3G^o - e$ $^3G^\dagger$ (103)
1420. 239	A	8	5. 37	14. 06	2-2		2704. 046	A	15	7. 96	12. 53	5-5	
1953. 234	A	40	6. 88	13. 20	4-5	<i>c</i> $^3D - w$ $^3F^o \dagger$ (94)	2701. 530	A	12	7. 96	12. 53	4-4	
1947. 945	A	40	6. 84	13. 17	3-4		2699. 852	A	10	7. 96	12. 53	3-3	
1945. 150	A	25	6. 80	13. 15	2-3		2698. 732	A	10	7. 96	12. 53	2-2	
1944. 168	A	15	6. 78	13. 13	1-2								
1944. 794	A	12	6. 77	13. 12	0-1		2806. 510	A	25	8. 13	12. 53	7-6	<i>z</i> $^3H^o - e$ $^3G^\dagger$ (104)
1960. 388	A	11	6. 88	13. 17	4-4		2797. 576	A	25	8. 12	12. 53	6-5	
1954. 855	A	12	6. 84	13. 15	3-3		2789. 304	A	12	8. 11	12. 53	5-4	
1950. 919	A	15	6. 80	13. 13	2-2		2781. 936	A	20	8. 09	12. 53	4-3	
1948. 277	A	10	6. 78	13. 12	1-1		2458. 582	A	12	8. 13	13. 15	7-8	<i>z</i> $^3H^o - e$ $^3I^\dagger$ (105)
1942. 646	A	20	6. 88	13. 23	4-3	<i>c</i> $^3D - u$ $^3P^o \dagger$ (95)	2452. 326	A	10	8. 12	13. 15	6-7	
1946. 335	A	9	6. 84	13. 18	3-2		2446. 393	A	10	8. 11	13. 15	5-6	
1930. 437	A	8	6. 84	13. 23	3-3								
1936. 717	A	10	6. 80	13. 18	2-2								
1862. 816	A	20	6. 88	13. 50	4-3	<i>c</i> $^3D - t$ $^3P^o \dagger$ (96)	2862. 404	A	20	8. 21	12. 53	5-6	<i>z</i> $^3F^o - e$ $^3G^\dagger$ (106)
1865. 547	A	12	6. 84	13. 45	3-2		2868. 891	A	20	8. 23	12. 53	4-5	
1865. 296	A	8	6. 80	13. 42	2-1		2871. 675	A	10	8. 23	12. 53	3-4	
*1851. 597	A	15	6. 84	13. 50	3-3		2870. 665	A	10	8. 23	12. 53	2-3	
1856. 700	A	12	6. 80	13. 45	2-2		2860. 629	A	10	8. 21	12. 53	5-5	
1859. 119	A	10	6. 78	13. 42	1-1		2868. 097	A	10	8. 23	12. 53	4-4	
1864. 617	A	15	6. 88	13. 50	4-5	<i>c</i> $^3D - u$ $^3F^o \dagger$ (97)							
1857. 018	A	10	6. 84	13. 48	3-4		2898. 532	A	15	8. 27	12. 53	3-4	<i>z</i> $^3D^o - e$ $^3G^\dagger$ (107)
*1851. 597	A	15	6. 80	13. 47	2-3		2889. 312	A	10	8. 26	12. 53	2-3	
1848. 160	A	10	6. 78	13. 46	1-2		2888. 811	A	15	8. 26	12. 53	1-2	
1854. 903	A	20	6. 88	13. 53	4-4	<i>c</i> $^3D - x$ $^3D^o \dagger$ (98)							
1848. 266	A	20	6. 84	13. 51	3-3								
1844. 080	A	6	6. 80	13. 50	2-2								
1859. 444	A	8	6. 88	13. 51	4-3		2861. 536	A	20	8. 36	12. 68	6-5	<i>z</i> $^3H^o - e$ $^3G^\dagger$ (108)
1852. 810	A	10	6. 84	13. 50	3-2		2867. 984	A	15	8. 38	12. 68	5-4	
1847. 780	A	10	6. 80	13. 49	2-1		2873. 125	A	25	8. 38	12. 68	4-3	
1827. 079	A	50	6. 88	13. 63	4-4	<i>c</i> $^3D - w$ $^3D^o \dagger$ (99)							
1823. 697	A	30	6. 84	13. 60	3-3		2871. 532	A	10	8. 38	12. 68	4-5	<i>z</i> $^3F^o - e$ $^3G^\dagger$ (109)
1819. 750	A	9	6. 80	13. 59	2-2		2865. 182	A	15	8. 37	12. 68	3-4	
*1816. 287	A	20	6. 78	13. 58	1-1		2861. 300	A	15	8. 37	12. 68	2-3	
1834. 573	A	25	6. 88	13. 60	4-3								
1828. 250	A	20	6. 84	13. 59	3-2								
1822. 212	A	10	6. 80	13. 58	2-1								
*1816. 287	A	20	6. 84	13. 63	3-4								
1815. 242	A	20	6. 80	13. 60	2-3		2814. 561	A	10	8. 43	12. 81	3-3	<i>y</i> $^3P^o - e$ 3P (110)
1813. 865	A	15	6. 78	13. 59	1-2		2822. 544	A	15	8. 45	12. 82	2-2	
1813. 287	A	10	6. 77	13. 58	0-1		2826. 281	A	10	8. 46	12. 82	1-1	
1801. 272	A	50	6. 88	13. 73	4-3	<i>c</i> $^3D - s$ $^3P^o \dagger$ (100)	2811. 970	A	10	8. 43	12. 82	3-2	
1791. 884	A	25	6. 84	13. 73	3-2		2819. 980	A	10	8. 45	12. 82	2-1	
1784. 245	A	15	6. 80	13. 72	2-1		2825. 139	A	10	8. 45	12. 81	2-3	
1790. 788	A	20	6. 84	13. 73	3-3		2828. 831	A	12	8. 46	12. 82	1-2	
1783. 718	A	20	6. 80	13. 73	2-2								
1778. 595	A	20	6. 78	13. 72	1-1								
1725. 295	A	15	6. 88	14. 03	4-5	<i>c</i> $^3D - s$ $^3F^o \dagger$ (101)	2913. 716	A	20	8. 73	12. 97	3-2	<i>z</i> $^3D^o - e$ $^3P^\dagger$ (111)
1715. 982	A	12	6. 84	14. 03	3-4		2933. 379	A	8	8. 76	12. 96	2-1	
*1714. 390	A	20	6. 88	14. 08	4-	<i>c</i> $^3D - r$ $^3F^o$ (102)	2917. 071	A	25	9. 82	14. 05	5-	
*1704. 862	A	15	6. 84	14. 08	3-		2916. 150	A	25	9. 82	14. 05	4-	<i>e</i> $^3D - x$ $^3F^o$ (112)
*1697. 526	A	12	6. 80	14. 08	2-		2915. 454	A	25	9. 82	14. 05	3-	
*1692. 457	A	10	6. 78	14. 08	1-		2914. 952	A	25	9. 82	14. 05	2-	

Mn III

I P 33.54 Anal C List B October 1951

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Mn III

Mn III

Mn III—Continued

Mn III—Continued

Strongest Unclassified Lines of Mn III

IRON, Z=26

Fe I

IP 7.86 Anal A List A June 1950

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 *and §§ = Blend of Fe I and Fe II, and also of Fe I and Fe II

Fe I

Fe I

IA	Ref	Int	EP		J	Multiplet (No)	IA	Ref	Int	EP		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2966.901	G	125R	0.00	4.16	4-5	<i>a</i> $^4D - y$ $^4F^o$	2720.516	U	(1)	0.05	4.59	3-3	<i>a</i> $^4D - y$ $^4F^o$
2973.237	U	60R	0.05	4.20	3-4		2715.323	U	1	0.09	4.63	2-2	
2973.134	U	60R	0.09	4.24	2-3		2690.067	G	2	0.00	4.59	4-3	
*2970.106	G	40R	0.11	4.26	1-2		2694.222	G	(1)	0.05	4.63	3-2	
2965.255	A	20	0.12	4.28	0-1		2756.264	U	(3)	0.05	4.53	3-4	
2936.904	G	60R	0.00	4.20	4-4		2742.017	U	2	0.09	4.59	2-3	
2947.877	G	60R	0.05	4.24	3-3		2728.973	U	(2)	0.11	4.63	1-2	
2953.940	A	50R	0.09	4.26	2-2								
2957.365	A	30R	0.11	4.28	1-1		2719.027	G	60R	0.00	4.54	4-3	<i>a</i> $^4D - y$ $^4P^o$
2912.158	A	20r	0.00	4.24	4-3		2720.902	G	40r	0.05	4.59	3-2	
2929.008	A	25r	0.05	4.26	3-2		2723.577	A	15	0.09	4.62	2-1	
2941.343	A	15r	0.09	4.28	2-1		2750.140	G	25r	0.05	4.54	3-3	
2874.172	C	10	0.00	4.29	4-5	<i>a</i> $^4D - z$ $^4G^o$	2742.406	G	30r	0.09	4.59	2-2	
2869.308	A	10	0.05	4.35	3-4		2737.310	G	20r	0.11	4.62	1-1	
2863.864	C	8	0.09	4.40	2-3		2772.113	G	1	0.09	4.54	2-3	
2858.896	G	5	0.11	4.43	1-2		2756.329	G	20	0.11	4.59	1-2	
2835.457	G	6	0.00	4.35	4-4		2744.068	G	10	0.12	4.62	0-1	
2840.422	G	6	0.05	4.40	3-3								
2843.923	U	(3)	0.09	4.43	2-2		2618.708	G	2	0.00	4.71	4-3	<i>a</i> $^4D - y$ $^4D^o$
2807.245	U	2	0.00	4.40	4-3		2612.771	G	2	0.05	4.77	3-2	
2820.801	G	2	0.05	4.43	3-2		2610.750	G	1	0.09	4.81	2-1	
2825.687	V	6	0.00	4.37	4-5	<i>a</i> $^4D - z$ $^4G^o$	2647.558	C	3	0.05	4.71	3-3	
2827.892	G	5	0.05	4.42	3-4		2632.593	G	2	0.09	4.77	2-2	
*2825.995§	U	(2)	0.09	4.45	2-3		2623.366	U	2	0.11	4.81	1-1	
2795.006	G	3	0.00	4.42	4-4		2667.912	G	1	0.09	4.71	2-3	
2803.169	G	(1)	0.05	4.45	3-3		2645.422	G	1	0.11	4.77	1-2	
							*2629.579§	G	2	0.12	4.81	0-1	

Fe I—Continued

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)
			Low	High					Low	High		
Air												
2522.848	G	40R	0.00	4.89	4-4	$a^4D - x^4D^o$	2250.784	G	(10)	0.00	5.48	4-4
2527.433	G	15r	0.05	4.93	3-3	(7)	2265.053	C	(20)	0.05	5.50	3-3
2529.134	G	10r	0.09	4.97	2-2		*2274.088	C	(9)	0.09	5.51	2-2
2529.833	G	3	0.11	4.99	1-1		2278.614	U	(2)	0.11	5.53	1-1
2501.130	G	20R	0.00	4.93	4-3		2243.911	U	(1)	0.00	5.50	4-3
2510.833	G	15R	0.05	4.97	3-2		2259.279	U	(1)	0.05	5.51	3-2
2518.100	G	12r	0.09	4.99	2-1		2269.093	G	(18)	0.09	5.53	2-1
2524.290	G	8r	0.11	5.00	1-0		2275.189	G	(6)	0.11	5.56	1-0
2549.612	G	10r	0.05	4.89	3-4		2272.067	C	(15)	0.05	5.48	3-4
2545.977	G	10r	0.09	4.93	2-3		*2279.922	C	(10)	0.09	5.50	2-3
2540.971	G	10R	0.11	4.97	1-2		2283.653	C	(12)	0.11	5.51	1-2
2535.604	G	8r	0.12	4.99	0-1		2283.299	G	(9)	0.12	5.53	0-1
2473.156	G	(3)	0.00	4.99	4-4	$a^4D - y^4P^o$	2267.080	G	(9)	0.05	5.49	3-2
2512.361	G	(5r)	0.05	4.96	3-3	(8)	2281.986	U	(1)	0.09	5.49	2-2
*2486.372	G	(10)	0.00	4.96	4-3		2291.624	G	(4)	0.11	5.49	1-2
*2498.895	G	10	0.05	4.99	3-4		2210.686	C	(9)	0.00	5.58	4-3
2530.694	C	3	0.09	4.96	2-3		2228.170	C	(10)	0.05	5.59	3-2
2552.604	G	2	0.11	4.94	1-2		2229.066	U	(5)	0.09	5.62	2-1
2483.270	G	60R	0.00	4.97	4-5	$a^4D - x^4F^o$	2231.211	C	(15)	0.05	5.58	3-3
2488.143	G	40R	0.05	5.01	3-4	(9)	2242.579	U	(2)	0.11	5.62	1-1
2490.642	G	30R	0.09	5.04	2-3		2238.259	U	(15)	0.09	5.59	2-2
2491.155	G	20R	0.11	5.06	1-2		2245.651	C	(15)	0.09	5.58	2-3
2489.751	G	15r	0.12	5.08	0-1		2251.865	G	(12)	0.11	5.59	1-2
2462.645	G	10r	0.00	5.01	4-4		2207.068	C	(6)	0.00	5.59	4-5
2472.910	V	12R	0.05	5.04	3-3		2220.912	U	(2)	0.05	5.61	3-4
2479.775	G	20R	0.09	5.06	2-2		2228.489	U	(1)	0.09	5.62	2-3
*2484.186	G	15R	0.11	5.08	1-1		2186.241	U	(3)	0.00	5.64	4-5
*2447.708	A	4	0.00	5.04	4-3		2201.117	C	(4)	0.05	5.66	3-4
2462.178	G	4	0.05	5.06	3-2		2211.234	C	(7)	0.09	5.67	2-3
2472.875	V	(5)	0.09	5.08	2-1		2217.744	U	(1)	0.11	5.67	1-2
2487.368	G	(4)	0.09	5.05	2-2	$a^4D - z^4S^o$	2181.133	U	(1n)	0.00	5.66	4-4
						(10)	2197.230	U	(1)	0.05	5.67	3-3
*2350.408	G	(5)	0.00	5.25	4-3	$a^4D - x^4P^o$	2166.769	G	(100)	0.00	5.70	4-3
*2355.327	G	(2)	0.05	5.29	3-2	(11)	*2178.073	U	(35)	0.05	5.72	3-2
2373.618	G	(20)	0.05	5.25	3-3		2187.192	C	(40)	0.09	5.73	2-1
2371.428	C	(15)	0.09	5.29	2-2		2186.483	G	(40)	0.05	5.70	3-3
2369.454	G	(8)	0.11	5.32	1-1		2191.836	G	(60)	0.09	5.72	2-2
2389.971	C	(25)	0.09	5.25	2-3		2196.040	C	(50)	0.00	5.73	1-1
2381.831	U	(1)	0.11	5.29	1-2		2200.723	C	(15)	0.11	5.72	1-2
2374.517	C	(10)	0.12	5.32	0-1		*2200.370	U	{(10r)}	0.12	5.73	0-1
2329.637	G	(2)	0.00	5.30	4-5	$a^4D - y^4G^o$						
2355.915	U	(1)	0.09	5.33	2-3	(12)						
2341.575	U	(1n)	0.05	5.32	3-4	$a^4D - z^4H^o$	*2178.073	U	(35)	0.09	5.75	2-1
						(13)	2186.890	C	(5)	0.11	5.75	1-1
							2191.202	C	(10)	0.12	5.75	0-1
2298.175	U	10r	0.00	5.37	4-4	$a^4D - w^4D^o$	*2158.622	U	{(1)}	0.05	5.77	3-2
2297.785	C	(35d)	0.05	5.42	3-3	(14)		{(1)}				
2299.218	C	(25)	0.09	5.45	2-2		2183.465	U	(1)	0.11	5.76	1-0
2296.925	C	(15d)	0.11	5.48	1-1		2172.137	U	(2)	0.09	5.77	2-2
2276.025	C	(12)	0.00	5.42	4-3		2172.581	C	(6)	0.11	5.79	1-1
2284.087	C	(40)	0.05	5.45	3-2		2180.866	C	(4)	0.11	5.77	1-2
2287.248	C	(30)	0.09	5.48	2-1		2176.837	C	(6)	0.12	5.79	0-1
2294.406	C	(25)	0.11	5.49	1-0		*2139.695	C	(3)	0.00	5.77	4-4
2320.356	C	(40)	0.05	5.37	3-4		2157.792	C	(5)	0.05	5.77	3-3
2313.102	C	(40)	0.09	5.42	2-3		2164.547	C	(7)	0.09	5.79	2-2
2308.997	C	(30)	0.11	5.45	1-2		2159.645	U	(4)	0.11	5.82	1-1
2301.682	C	(20)	0.12	5.48	0-1		2138.589	C	(3)	0.00	5.77	4-3
2259.511	C	15	0.00	5.46	4-5	$a^4D - w^4F^o$	*2151.099	C	(3)	0.09	5.82	2-1
2292.523	C	(30)	0.05	5.43	3-4	(15)						
2300.140	C	(30)	0.09	5.45	2-3		2159.92	X	(3)	0.11	5.82	1-0
2303.579	C	(20)	0.11	5.47	1-2		2158.922	U	(4)	0.05	5.77	3-4
2303.422	C	(15)	0.12	5.48	0-1		2171.292	G	(40)	0.09	5.77	2-3
2270.860	C	(18)	0.00	5.43	4-4		2173.212	C	(8)	0.11	5.79	1-2
2293.845	C	(25)	0.09	5.47	2-2		*2163.860	C	{(6)}	0.12	5.82	0-1
2298.657	G	(6)	0.11	5.48	1-1			{(1)}				
2263.476	U	(6)	0.00	5.45	4-3							

Fe I—Continued

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Vac						
2132.015	C	(4)	0.00	5.79	4-4	$a^4D - x^3F^o$ (25)	1957.831	N	25	0.00	6.31	4-4	$a^4D - t^3D^o$ (36)
2141.715	C	(1)	0.05	5.81	3-3		1962.871	N	20	0.05	6.34	3-3	
2150.182	C	(3)	0.09	5.83	2-2		1963.629	N	15	0.09	6.37	2-2	
*2151.099	C	(2)	0.05	5.79	3-4		1962.746	N	15	0.11	6.40	1-1	
2155.012	U	(3)	0.09	5.81	2-3		1946.978	N	25	0.00	6.34	4-3	
2122.188	N	1	0.00	5.82	4-4	$a^4D - z^3H^o$ (26)	*1955.690	N	20	0.09	6.40	2-1	
2141.083	U	(1)	0.05	5.82	3-4		1958.739	N	15	0.11	6.41	1-0	
2126.212	U	(1)	0.00	5.80	4-3	$a^4D - w^3D^o$ (27)	1973.911	N	1	0.05	6.31	3-4	
*2139.695	C	(2)	0.05	5.82	3-2		1974.059	N	1	0.09	6.34	2-3	
2146.710	U	(2n)	0.09	5.84	2-1		1970.771	N	0	0.11	6.37	1-2	
2145.188	C	(3)	0.05	5.80	3-3		1934.528	N	25	0.00	6.38	4-3	$a^4D - u^4P^o$ (37)
2153.004	C	(5)	0.09	5.82	2-2		1940.649	N	25	0.05	6.41	3-2	
*2155.238	U	(2)	0.11	5.84	1-1		1945.294	N	25	0.09	6.43	2-1	
2161.577	C	(5)	0.11	5.82	1-2		1950.223	N	20	0.05	6.38	3-3	
2159.425	U	(2)	0.12	5.84	0-1		*1951.556	N	25	0.09	6.41	2-2	
2108.139	N	12	0.00	5.85	4-5	$a^4D - w^3G^o$ (28)	1952.262	N	20	0.11	6.43	1-1	
2119.125	N	5	0.05	5.87	3-4		1961.236	N	20	0.09	6.38	2-3	
2139.929	U	(2)	0.09	5.85	2-2	$a^4D - 1^o$ (29)	*1958.598	N	30	0.11	6.41	1-2	
2148.394	U	(1n)	0.11	5.85	1-2		*1955.690	N	20	0.12	6.43	0-1	
2142.141	U	(1n)	0.11	5.87	1-1	$a^4D - y^3S^o$ (30)	1903.37	N	1	0.05	6.54	3-3	$a^4D - s^3D^o$ (38)
2103.964	N	1	0.05	5.92	3-4	$a^4D - v^3F^o$ (31)	1873.052	N	12	0.00	6.59	4-3	$a^4D - t^4P^o$ (39)
2110.233	C	30	0.12	5.97	0-1		1862.318	N	15	0.05	6.68	3-2	
2095.451	N	1	0.05	5.94	3-3		1866.815	N	10	0.09	6.70	2-1	
2103.048	N	25	0.09	5.96	2-2		1887.761	N	14	0.05	6.59	3-3	
2106.260	N	20	0.11	5.97	1-1		1872.359	N	15	0.09	6.68	2-2	
2090.380	N	30	0.05	5.96	3-2		1873.259	N	15	0.11	6.70	1-1	
2098.081	N	15p	0.09	5.97	2-1		1878.849	N	2	0.11	6.68	1-2	
2108.188	N	1p	0.05	5.91	3-3	$a^4D - x^3G^o$ (32)	1876.421	N	10	0.12	6.70	0-1	
2084.117	N	50	0.00	5.92	4-3	$a^4D - v^3P^o$ (33)	1863.54	N	0p	0.00	6.62	4-3	$a^4D - y^1F^o$ (40)
2093.660	N	40	0.05	5.95	3-2		1888.32	N	12n	0.09	6.62	2-3	
2100.795	C	30	0.09	5.98	2-1		1855.58	N	15	0.00	6.65	4-3	$a^4D - 10^o$ (41)
2102.349	C	30	0.05	5.92	3-3		1880.14	G	5	0.09	6.65	2-3	
2106.380	N	25	0.09	5.95	2-2		1866.07	N	12	0.05	6.67	3-3	$a^4D - 11^o$ (42)
2108.955	C	30	0.11	5.96	1-1		Air						
2115.168	C	20	0.09	5.92	2-3		2843.631	G	10	0.91	5.25	4-3	$a^4F - x^3P^o$ (43)
2114.588	N	25	0.11	5.95	1-2		2845.595	C	8	0.95	5.29	3-2	
2112.966	C	25	0.12	5.96	0-1		2848.713	G	5	0.99	5.32	2-1	
2087.525	N	25	0.05	5.96	3-2	$a^4D - x^3P^o$ (34)	2872.333	G	7	0.95	5.25	3-3	
2090.862	N	20	0.09	5.99	2-1		2866.624	G	7	0.99	5.29	2-2	
2100.144	N	10	0.09	5.96	2-2		2862.496	G	4	1.01	5.32	1-1	
2098.953	N	25	0.11	5.99	1-1		2893.763	V	1	0.99	5.25	2-3	
2108.302	N	12	0.11	5.96	1-2		2880.575	G	2	1.01	5.29	1-2	
2102.910	N	20	0.12	5.99	0-1								
Air													
1960.129	N	25	0.00	6.30	4-5	$a^4D - u^3F^o$ (35)	2788.106	G	30	0.86	5.28	5-6	$a^4F - y^4G^o$ (44)
1962.100	N	30	0.05	6.34	3-4		2813.288	A	30R	0.91	5.30	4-5	
1964.043	N	20	0.09	6.37	2-3		2832.436	A	25r	0.95	5.31	3-4	
1963.100	N	25	0.11	6.40	1-2		2843.977	G	20r	0.99	5.33	2-3	
1962.031	N	25	0.12	6.41	0-1		2851.798	A	15r	1.01	5.33	1-2	
1948.219	N	10	0.00	6.34	4-4		2778.221	A	20	0.86	5.30	5-5	
1952.997	N	20	0.05	6.37	3-3		2804.521	A	20	0.91	5.31	4-4	
1956.026	N	30	0.09	6.40	2-2		2823.276	A	20	0.95	5.33	3-3	
*1958.598	N	30	0.11	6.41	1-1		2838.120	A	10	0.99	5.33	2-2	
1937.274	N	35	0.00	6.37	4-3		2769.670	G	1	0.86	5.31	5-4	
1945.070	N	20	0.05	6.40	3-2		2795.540	G	(2)	0.91	5.33	4-3	
*1951.556	N	25	0.09	6.41	2-1		2817.505	G	6	0.95	5.33	3-2	

Fe I—Continued

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
<i>Air</i>													
*2746. 982§	C	20	0. 86	5. 35	5-6	a ⁵ F — z ⁵ H° (45)	2584.536	A	8	0. 86	5. 63	5-6	a ⁵ F — x ⁵ G° (52)
2806. 984	C	20	0. 91	5. 31	4-5		2606.826	G	6	0. 91	5. 64	4-5	
2825. 557	G	20	0. 95	5. 32	3-4		2623.532	G	5	0. 95	5. 66	3-4	
2828. 808	G	7	0. 99	5. 35	2-3		2635.808	A	8	0. 99	5. 67	2-3	
2772. 083	V	20	0. 86	5. 31	5-5		2643.997	C	8	1. 01	5. 67	1-2	
2797. 775	C	15	0. 91	5. 32	4-4		2576.688	G	4	0. 86	5. 64	5-5	
2808. 328	G	2	0. 95	5. 35	3-3		2599.565	U	6	0. 91	5. 66	4-4	
m2763. 09	P	Fe I	0. 86	5. 32	5-4		2618.018	G	5	0. 95	5. 67	3-3	
							2632.238	G	4	0. 99	5. 67	2-2	
							2569.595	G	(6)	0. 86	5. 66	5-4	
2733. 581	G	15	0. 86	5. 37	5-4	a ⁵ F — w ⁵ D° (46)	2594.150	G	1	0. 91	5. 67	4-3	
2735. 475	A	8	0. 91	5. 42	4-3		2614.494	G	1	0. 95	5. 67	3-2	
2742. 256	U	20	0. 95	5. 45	3-2		2556.862	G	1	0. 86	5. 68	5-6	a ⁵ F — z ⁵ I° (53)
2744. 526	G	8	0. 99	5. 48	2-1		*2579.266	G	(4)	0. 91	5. 70	4-5	
2753. 687	G	3	1. 01	5. 49	1-0		*2568.862§	G	(5)	0. 99	5. 79	2-1	a ⁵ F — y ⁵ P° (54)
*2767. 523§	A	20	0. 91	5. 37	4-4		2595.422	G	(2)	1. 01	5. 76	1-0	
2762. 027	G	15	0. 95	5. 42	3-3		2580.450	G	(2)	0. 99	5. 77	2-2	
*2761. 780§	G	18	0. 99	5. 45	2-2		2580.062	G	(2)	1. 01	5. 79	1-1	
2757. 315	G	10	1. 01	5. 48	1-1		2539.355	G	(7)	0. 91	5. 77	4-3	a ⁵ F — u ⁵ D° (55)
2794. 700	G	(1)	0. 95	5. 37	3-4		2552.827	G	(4)	0. 95	5. 79	3-2	
2781. 835	C	4	0. 99	5. 42	2-3		*2562.224	G	(5)	1. 01	5. 82	1-0	
*2774. 730§	G	3	1. 01	5. 45	1-2		*2569.742§	G	(4)	0. 95	5. 77	3-3	
2679. 062	A	10	0. 86	5. 46	5-5	a ⁵ F — w ⁵ F° (47)	2561.852	G	(3)	1. 01	5. 82	1-1	
2728. 020	G	3	0. 91	5. 43	4-4		2563.820	V	(2)	0. 95	5. 77	3-4	
2743. 564	G	3	0. 95	5. 45	3-3		*2579.266	G	(4)	0. 99	5. 77	2-3	
2754. 030	G	3	0. 99	5. 47	2-2		2501.692	G	(6)	0. 86	5. 79	5-4	a ⁵ F — z ⁵ F° (56)
2759. 814	G	4	1. 01	5. 48	1-1		2532.874	G	(2)	0. 95	5. 83	3-2	
2695. 032	G	1	0. 86	5. 43	5-4		2539.575	U	(1)	0. 95	5. 81	3-3	
2717. 368	G	(1)	0. 91	5. 45	4-3		2560.556	G	(4)	1. 01	5. 83	1-2	
2734. 613	G	(1)	0. 95	5. 47	3-2		*2495.869§	G	(5)	0. 86	5. 80	5-6	a ⁵ F — z ⁵ H° (57)
m2747. 00	P	Fe I	0. 99	5. 48	2-1		2522.488	G	(6)	0. 91	5. 80	4-5	
2711. 655	C	4	0. 91	5. 46	4-5		2494.250	G	(5)	0. 86	5. 80	5-5	
2754. 427	G	2	0. 95	5. 43	3-4		2516.249	G	(2)	0. 91	5. 82	4-4	
2763. 108	C	4	0. 99	5. 45	2-3		*2472.343	G	5	0. 86	5. 85	5-6	a ⁵ F — w ⁵ G° (59)
2766. 909	G	2	1. 01	5. 47	1-2		2496.532	C	6	0. 91	5. 85	4-5	
2666. 811	G	8	0. 86	5. 48	5-4	a ⁵ F — v ⁵ D° (48)	2555.648	C	6	0. 95	5. 87	3-4	
2689. 212	A	8	0. 91	5. 50	4-3		2561.262	U	(2)	0. 99	5. 80	2-3	
*2706. 581§	C	8	0. 95	5. 51	3-2		2564.555	G	(4)	1. 01	5. 82	1-2	
2718. 435	C	6	0. 99	5. 53	2-1		2519.628	C	(10)	1. 01	5. 90	1-2	
2726. 054	G	6	1. 01	5. 56	1-0		2468.878	C	4	0. 86	5. 85	5-5	
2699. 107	A	6	0. 91	5. 48	4-4		2485.989	G	(10)	0. 91	5. 87	4-4	
2714. 868	G	1	0. 95	5. 50	3-3		2458.564	G	(4)	0. 86	5. 87	5-4	
2725. 606	U	(2)	0. 99	5. 51	2-2		2535.128	G	(5)	0. 99	5. 85	2-2	a ⁵ F — 1° (60)
2730. 981	G	2	1. 01	5. 53	1-1		2517.658	G	(8)	0. 99	5. 89	2-3	
*2724. 951§	G	10	0. 95	5. 48	3-4		2519.628	C	(10)	1. 01	5. 90	1-2	
2734. 002	G	2	0. 99	5. 50	2-3		2468.878	C	4	0. 86	5. 85	5-5	
2738. 210	G	(2)	1. 01	5. 51	1-2		2485.989	G	(10)	0. 91	5. 87	4-4	
2717. 786	G	2	0. 95	5. 49	3-2	a ⁵ F — y ⁵ S° (49)	2458.564	G	(4)	0. 86	5. 87	5-4	
*2736. 960§	G	(3)	0. 99	5. 49	2-2		2535.128	G	(5)	0. 99	5. 85	2-2	a ⁵ F — z ⁵ G° (61)
2641. 645	G	4	0. 91	5. 58	4-3	a ⁵ F — x ⁵ D° (50)	2516.569	G	(5)	0. 95	5. 86	3-4	a ⁵ F — v ⁵ F° (62)
2662. 056	C	3	0. 95	5. 59	3-2		2457.596	C	6	0. 86	5. 88	5-5	
2661. 196	U	(2)	0. 99	5. 62	2-1		2465.148	C	6	0. 91	5. 92	4-4	
2666. 398	G	2	0. 95	5. 58	3-3		2474.813	C	(8)	0. 95	5. 94	3-3	
2680. 452	G	2	0. 99	5. 59	2-2		2483.531	G	10	0. 99	5. 96	2-2	
2673. 213	C	1	1. 01	5. 62	1-1		2487.064	C	(12)	1. 01	5. 97	1-1	
2684. 857	U	(2)	0. 99	5. 58	2-3		2438.181	C	2	0. 86	5. 92	5-4	
2692. 658	U	(3)	1. 01	5. 59	1-2		2453.475	C	5	0. 91	5. 94	4-3	
2605. 656	G	6	0. 86	5. 59	5-5	a ⁵ F — y ⁵ G° (51)	2467.730	G	(5)	0. 95	5. 96	3-2	
2636. 477	G	1	0. 91	5. 59	4-5		2476.654	G	3	0. 99	5. 97	2-1	
*2651. 706§	C	2	0. 95	5. 61	3-4		2486.690	G	(10)	0. 95	5. 92	3-4	
2680. 396	G	1	0. 99	5. 62	2-3		*2493.998	G	(6)	1. 01	5. 96	1-2	

Fe I—Continued

Fe I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2443.871	C	(20)	0.86	5.91	5-5	$a^4F - x^4G^o$	2154.458	C	(2)	0.86	6.58	5-4	$a^4F - g^4G^o$
*2472.343	G	5	0.91	5.90	4-4								(77)
2492.64	W	(2)	0.95	5.91	3-3								
2445.210	G	(6)	0.86	5.90	5-4		*2155.238	U	(2)	0.95	6.68	3-2	$a^4F - t^4P^o$
*2470.961	G	(4)	(0.91	5.91	4-3		2189.393	U	(1n)	0.95	6.59	3-3	(78)
*2493.998	G	(6)	0.95	5.90	3-4								
2508.751	G	(5)	0.99	5.91	2-3		2176.396	U	(1)	0.95	6.62	3-3	$a^4F - y^4F^o$
2420.390	G	(2)	0.86	5.95	5-5	$a^4F - w^4G^o$	2149.170	U	(1)	0.91	6.65	4-3	$a^4F - 10^o$
						(64)	2165.537	U	(1n)	0.95	6.65	3-3	(80)
*2463.728	G	(6)	0.95	5.96	3-2	$a^4F - x^4P^o$	2133.311	U	(1)	0.91	6.70	4-4	$a^4F - t^4G^o$
2479.478	G	6	0.99	5.96	2-2	(65)	2113.08	N	20	0.86	6.70	5-4	(81)
2478.861	G	(2)	1.01	5.99	1-1		2149.416	U	(1)	0.95	6.70	3-4	
2419.058	G	(2)	0.91	6.01	4-4	$a^4F - y^4G^o$	2144.576	U	(1)	0.99	6.74	2-3	
						(66)	2160.236	U	(1)	0.95	6.67	3-3	$a^4F - 11^o$
*2408.045	G	(3)	0.95	6.08	3-3	$a^4F - w^4F^o$	m2110.23	P	Fe I	0.86	6.70	5-4	$a^4F - 13^o$
*2423.094	G	(4)	0.99	6.08	2-3	(67)	2130.417	U	(1)	0.91	6.70	4-4	(83)
*2408.045	G	(3)	0.95	6.08	3-2	$a^4F - v^4D^o$	2016.512	N	5	0.91	7.03	4-4	$a^4F - v^4G^o$
2419.879	G	(2)	0.99	6.09	2-1								(84)
*2423.094	G	(4)	0.99	6.08	2-2								
2429.810	G	(4)	1.01	6.09	1-1								
*2350.408	G	(5)	0.86	6.11	5-5	$a^4F - v^4G^o$	2989.39	P	(1)	1.80	5.73	2-1?	$a^4F - w^4P^o$
2385.92	P	(1)	0.95	6.13	3-4	(69)							(85)
2267.465	G	(15)	0.86	6.30	5-5	$a^4F - u^4F^o$	2877.300	C	8	1.48	5.77	4-4	
2271.781	C	(40)	0.91	6.34	4-4	(70)	*2875.302	G	5	1.48	5.77	4-3	$a^4F - u^4D^o$
2277.663	G	(12)	0.95	6.37	3-3		2912.257	V	3	1.55	5.79	3-2	(86)
2280.222	G	(8)	0.99	6.40	2-2		2922.383	U	(1)	1.60	5.82	2-1	
2282.861	G	(4)	1.01	6.41	1-1		2863.429	G	8	1.48	5.79	4-4	$a^4F - x^4F^o$
2248.858	C	(25)	0.86	6.34	5-4		2895.035	C	8	1.55	5.81	3-3	
2266.903	G	(10)	0.95	6.40	3-2		2920.691	C	5	1.60	5.83	2-2	
*2274.088	C	(9)	0.99	6.41	2-1		2846.830	G	3	1.48	5.81	4-3	
2290.771	G	(3)	0.91	6.30	4-5		2886.316	G	3	1.55	5.83	3-2	
2290.064	G	(3) Ni?	0.95	6.34	3-4		2929.618	V	2	1.60	5.81	2-3	
*2291.122	C	(15)	0.99	6.37	2-3								
2289.032	G	(10)	1.01	6.40	1-2		2853.685	V	(2)	1.48	5.80	4-5	$a^4F - g^4H^o$
							2893.882	V	2	1.55	5.82	3-4	(88)
2264.389	C	(45)	0.86	6.31	5-4	$a^4F - t^4D^o$	2845.714	U	(2)	1.48	5.82	4-4	
2272.816	G	(8)	0.91	6.34	4-3	(71)							
2277.098	C	(9)	0.95	6.37	3-2		2852.952	G	(1)	1.48	5.80	4-3	$a^4F - w^4D^o$
2283.079	G	(9)	1.01	6.41	1-0		2891.410	U	(1)	1.55	5.82	3-2	(89)
2287.632	C	(15)	0.91	6.31	4-4		2914.305	G	3	1.60	5.84	2-1	
*2291.122	C	(15)	0.95	6.34	3-3		2901.381	G	5	1.55	5.80	3-3	
2290.546	G	(9)	0.99	6.37	2-2		2925.899	V	4	1.60	5.82	2-2	
2306.164	G	(2)	0.95	6.31	3-4		2936.12	P	(1)	1.60	5.80	2-3	
*2304.727	G	(5)	0.99	6.34	2-3								
2299.453	U	(1)	1.01	6.37	1-2?		2845.544	U	(1)	1.55	5.89	3-3	$a^4F - w^4G^o$
							2867.560	G	3	1.60	5.90	2-2	(90)
2247.461	U	(1)	0.86	6.35	5-4	$a^4F - 4^o$	*2834.414	U	(1)	1.55	5.90	3-2	
						(72)	2867.880	U	(1)	1.55	5.85	3-2	$a^4F - 1^o$
2255.861	C	(45)	0.91	6.38	4-3	$a^4F - u^4P^o$							(91)
m2260.86	P	Fe I	0.95	6.41	3-2	(73)	2805.808	G	(1)	1.48	5.88	4-5	$a^4F - g^4F^o$
2265.61	X	(1)	0.99	6.43	2-1		2826.50	U	(3)	1.55	5.92	3-4	(92)
2292.79	X	(1)	1.01	6.39	1-2	$a^4F - 7^o$	2811.160	U	(1n)	1.55	5.94	3-3	
						(74)	*2834.414	U	(1)	1.60	5.96	2-2	
2241.85	X	(1)	0.91	6.42	4-3	$a^4F - u^4D^o$	2765.70	U	(1)	1.48	5.94	4-3	
2245.14	X	(1)	0.99	6.48	2-1	(75)							
2193.411	U	(2)	0.91	6.54	4-3	$a^4F - s^4D^o$	2787.935	U	5	1.48	5.91	4-5	$a^4F - x^4G^o$
						(76)	2835.948	G	(1)	1.55	5.90	3-4	
							2867.311	G	3	1.60	5.91	2-3	
							2834.177	U	(1)	1.55	5.91	3-3	

Fe I—Continued

Fe I—Continued

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2807. 96	U	(1)	1. 55	5. 95	3-2	$a^3F - v^3P^o$ (94)	Air 2058. 100	N	1	1. 48	7. 47	4-5	$a^3F - t^3H^o$ (115)
2792. 397	G	1	1. 55	5. 97	3-4	$a^3F - w^3G^o$ (95)	2047. 241	N	2	1. 48	7. 51	4-3?	$a^3F - q^3G^o$ (116)
2815. 506	G	3	1. 60	5. 98	2-3								
2796. 871	G	(1)	1. 55	5. 96	3-2	$a^3F - x^3P^o$ (96)	2934. 370	U	(1)	2. 17	6. 37	3-3	$a^3P - u^3F^o$ (117)
2812. 31	U	(1)	1. 60	5. 99	2-1								
2722. 032	U	(2)	1. 48	6. 01	4-4	$a^3F - y^3G^o$ (97)	2981. 852	G	6	2. 17	6. 31	3-4	$a^3P - t^3D^o$ (118)
2692. 247	G	(2)	1. 48	6. 06	4-4	$a^3F - w^3F^o$ (98)	2972. 277	G	3	2. 19	6. 34	2-3	
2741. 578	U	(2)	1. 60	6. 10	2-2		2966. 26	U	(2)	2. 21	6. 37	1-2	
2656. 792	G	(2)	1. 48	6. 12	4-5	$a^3F - y^3H^o$ (99)	2956. 71	U	(1)	2. 17	6. 34	3-3	
2689. 827	G	2	1. 55	6. 14	3-4		2948. 738	U	(2)	2. 19	6. 37	2-2	
							2939. 072	G	(1)	2. 21	6. 41	1-0	
2666. 970	U	3	1. 48	6. 11	4-5	$a^3F - v^3G^o$ (100)	2961. 70	U	(1)	2. 17	6. 33	3-4	$a^3P - v^3F^o$ (119)
2697. 019	G	2	1. 55	6. 13	3-4								
2710. 543	G	2	1. 60	6. 15	2-3		2950. 240	G	20n	2. 17	6. 35	3-	$a^3P - 5^o$ (120)
2655. 14	U	(1)	1. 48	6. 13	4-4								
2680. 91	U	(1)	1. 55	6. 15	3-3		2928. 105	U	(2)	2. 17	6. 38	3-3	$a^3P - u^3P^o$ (121)
2557. 268	G	(1)	1. 48	6. 30	4-5	$a^3F - x^3H^o$ (101)	2924. 59	P	(1n)	2. 21	6. 43	1-1	
							*2907. 518	G	5	2. 19	6. 43	2-1	
2537. 454	G	(5)	1. 48	6. 34	4-5	$a^3F - u^3G^o$ (102)	2922. 62	V	(1n)	2. 17	6. 39	3-2	$a^3P - 7^o$ (122)
2556. 298	U	(4)	1. 55	6. 38	3-4		2937. 806	G	10n	2. 19	6. 39	2-2	
2572. 752	G	(4)	1. 60	6. 40	2-3								
*2571. 57§	W	(3)	1. 55	6. 35	3-	$a^3F - 5^o$ (103)	2770. 695	G	(1)	2. 19	6. 64	2-1	$a^3P - v^3P^o$ (123)
2598. 855	U	(1)	1. 60	6. 35	2-?		2840. 932	U	(3)	2. 19	6. 53	2-2	
2515. 848	G	(2)	1. 55	6. 46	3-2	$a^3F - u^3D^o$ (104)	2786. 18	U	(1)	2. 21	6. 64	1-1	
							*2857. 20§	W	(1)	2. 21	6. 53	1-2	
2417. 490	G	(2)	1. 48	6. 58	4-4	$a^3F - 9^o$ (105)	2794. 157	U	(1)	2. 17	6. 58	3-4	$a^3P - 9^o$ (124)
2398. 215	U	(1)	1. 48	6. 62	4-3	$a^3F - y^3F^o$ (106)	2789. 477	G	(2)	2. 17	6. 59	3-3	$a^3P - t^3P^o$ (125)
2365. 509	U	(1n)	1. 48	6. 70	4-4	$a^3F - t^3G^o$	2747. 553	G	(3)	2. 19	6. 68	2-2	
2377. 991	U	(2)	1. 55	6. 74	3-3	$a^3F - s^3G^o$ (107)	2750. 708	U	(1)	2. 21	6. 70	1-1	
2300. 599	U	(1)	1. 48	6. 84	4-5	$a^3F - v^3H^o$ (108)	2734. 266	G	2	2. 17	6. 68	3-2	
2295. 535	U	(1n)	1. 48	6. 85	4-5	$a^3F - x^3H^o$ (109)	2735. 614	U	8	2. 19	6. 70	2-1	
							2762. 770	G	(3)	2. 21	6. 68	1-2	
2281. 66	X	(1)	1. 48	6. 89	4-3	$a^3F - w^3F^o$ (110)	2774. 15	U	(1)	2. 19	6. 64	2-3	$a^3P - x^3F^o$ (127)
							*2750. 872§	G	5	2. 17	6. 65	3-3	$a^3P - 10^o$ (128)
2275. 593	G	(2)	1. 48	6. 90	4-5	$a^3F - s^3G^o$	2764. 323	G	3	2. 19	6. 65	2-3	
2306. 378	G	(4)	1. 55	6. 90	3-4	$a^3F - s^3G^o$ (111)	2720. 194	G	(3)	2. 17	6. 70	3-4	$a^3P - 13^o$ (129)
2317. 892	G	(2)	1. 60	6. 93	2-3		2567. 86	W	(3)	2. 21	7. 02	1-2	$a^3P - u^3F^o$ (130)
2240. 627	C	(4)	1. 48	6. 99	4-4	$a^3F - u^3F^o$ (112)							
2260. 594	U	(2)	1. 55	7. 01	3-3		2976. 126	G	5	2. 27	6. 42	2-3	$a^3P - u^3D^o$ (131)
2256. 750	U	(1)	1. 55	7. 02	3-2		3053. 065	G	5	2. 41	6. 46	1-2	
2222. 75	G	(7)	1. 48	7. 03	4-4	$a^3F - v^3G^o$ (113)	3078. 436	V	3	2. 47	6. 48	0-1	
							2947. 363	U	(2)	2. 27	6. 46	2-2	
2193. 564	U	(2)	1. 48	7. 10	4-4	$a^3F - t^3F^o$ (114)	3033. 101	U	(1)	2. 41	6. 48	1-1	
2217. 578	U	(1n)	1. 55	7. 12	3-3		2928. 753	U	(3)	2. 27	6. 48	2-1	
2234. 432	U	(2)	1. 60	7. 12	2-2		2954. 651	G	5	2. 27	6. 45	2-3	$a^3P - t^3D^o$ (132)
2189. 183	U	(1)	1. 48	7. 12	4-3		3063. 933	U	(2)	2. 41	6. 44	1-1?	
2237. 814	U	(2n)	1. 60	7. 12	2-3		2957. 491	U	(2)	2. 27	6. 44	2-1?	

Fe I—Continued

Fe I—Continued

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2899.416	C	8	2.27	6.53	2-1	a 3P -8° (133)	Air 2769.297	G	(6)	2.39	6.85	6-6	a 3H -v $^1H^o$ (151)
2894.505	C	10	2.27	6.53	2-2	a 3P -v $^1P^o$ (134)	2791.786	G	(2)	2.42	6.84	5-5	
2918.354	V	3	2.41	6.64	1-1		2803.613	G	(2)	2.44	6.84	4-4	
2821.63	U	(1)	2.27	6.64	2-1		2773.907	U	(1)	2.39	6.84	6-5	
2996.386	G	5	2.41	6.53	1-2		2787.12	U	(1)	2.42	6.85	5-6	
2960.299	U	1	2.47	6.64	0-1		2784.346	U	(2)	2.42	6.85	5-5	a 3H -z $^1H^o$ (152)
*2868.45455	G	3	2.27	6.57	2-1	a 3P -z $^1P^o$ (135)	*2737.6438	V	(2)	2.39	6.90	6-5	a 3H -s $^3G^o$
2968.481	U	(2)	2.41	6.57	1-1		2755.184	U	(3)	2.42	6.90	5-4	(153)
2920.29	U	(1)	2.47	6.70	0-1	a 3P -t $^1P^o$ (136)	2706.012	G	4	2.39	6.95	6-6	a 3H -u $^3H^o$ (154)
2879.461	U	(1)	2.41	6.70	1-1		2719.418	G	3	2.42	6.96	5-5	
2833.401	U	(2)	2.27	6.62	2-3	a 3P -y $^1F^o$ (137)	2728.819	G	2	2.44	6.97	4-4	
							2702.453	U	(2)	2.39	6.96	6-5	
							*2716.418	U	(1)	2.42	6.97	5-4	
2815.017	G	(1)	2.27	6.65	2-3	a 3P -10° (138)	2716.259	V	(2)	2.44	6.99	4-4	a 3H -u $^3F^o$ (155)
2806.072	G	(1)	2.27	6.67	2-3	a 3P -11° (139)	2656.145	G	3	2.39	7.04	6-7	a 3H -x $^3I^o$ (156)
							2669.492	G	2	2.42	7.05	5-6	
2674.71	U	(1)	2.27	6.88	2-2	a 3P -w $^1D^o$ (140)	2439.743	G	(25)	2.39	7.45	6-6	a 3H -t $^3H^o$ (157)
2761.48	P	(1)	2.41	6.88	1-2		2442.567	C	(20)	2.42	7.47	5-5	
							2440.106	G	(15)	2.44	7.50	4-4	
							2452.590	G	(2)	2.44	7.47	4-5	
2941.77	U	(1)	2.41	6.61	4-3	z $^3D^o$ -h 5D (141)							
2930.59	P	(1)	2.47	6.68	1-1?		2873.655	U	(2)	2.55	6.84	4-5	b 3F -v $^3H^o$ (158)
2901.910	G	5	2.39	6.64	5-5	z $^3D^o$ -g 7D (142)							
2892.479	GG	(1)	2.41	6.68	4-4		2834.755	G	(2)	2.55	6.90	4-5	b 3F -s $^3G^o$
2874.89	W	(3)	2.39	6.68	5-4		2853.774	U	(3)	2.58	6.90	3-4	(159)
2868.213	G	(1)	2.44	6.74	3-2		2851.52	W	(2)	2.60	6.93	2-3	
2869.833	U	(2)	2.46	6.76	2-1		2819.51	P	(2)	2.55	6.93	4-3	
2919.838	G	(2)	2.41	6.64	4-5								
2908.864	V	(2)	2.44	6.68	3-4		2780.700	U	1	2.55	6.99	4-4	b 3F -u $^3F^o$ (160)
2897.60	P	(1)	2.46	6.72	2-3		2784.017	U	(2)	2.58	7.01	3-3	
2889.991	V	(2)	2.47	6.74	1-2		2766.03	U	(1)	2.55	7.01	4-3	
2696.284	G	(5)	2.39	6.97	5-	z $^3D^o$ -1 (143)	2708.570	G	4	2.55	7.10	4-4	b 3F -t $^3F^o$ (161)
							m2719.06	P	Fe I	2.58	7.12	3-3	
							*2726.2378	G	(2)	2.60	7.12	2-2	
2694.536	G	(5)	2.39	6.97	5-	z $^3D^o$ -2 (144)	2701.908	G	(2)	2.55	7.12	4-3	
2709.989	G	(2)	2.41	6.97	4-		2714.062	U	(2)	2.58	7.12	3-2	
2681.586	G	(2)	2.41	7.02	4-	z $^3D^o$ -3 (145)	2725.805	U	(1)	2.58	7.10	3-4	
2695.662	U	(2gn)	2.44	7.02	3-		2731.281	U	(2)	2.60	7.12	2-3	
2593.510	G	(3)	2.39	7.15	5-5	z $^3D^o$ -h 7D (146)	2454.706	G	6	2.55	7.40	4-5	b 3F -r $^3G^o$ (162)
							2543.920	G	6	2.58	7.43	3-4	
							2542.101	C	6	2.60	7.45	2-3	
							2528.91	W	(3)	2.55	7.43	4-4	
							2531.51	P	(1)	2.58	7.45	3-3	
2965.811	U	2	2.42	6.58	5-4	a 3H -9° (147)	2505.004	G	(3)	2.55	7.47	4-5	b 3F -t $^3H^o$ (163)
							2506.569	G	(4)	2.58	7.50	3-4	
							2491.983	G	(8)	2.55	7.50	4-4	
2931.420	U	(2)	2.44	6.65	4-3	a 3H -10° (148)	2496.992	G	(4)	2.55	7.49	4-5	b 3F -q $^3G^o$ (164)
							2513.847	G	(3)	2.60	7.51	2-3	
2889.89	W	(3)	2.39	6.66	6-5	a 3H -t $^3G^o$ (149)	2492.17	W	(2)	2.55	7.50	4-4	
2887.961	U	(1)	2.42	6.70	5-4		2503.491	G	(3)	2.58	7.51	3-3	
2871.73	U	(1)	2.44	6.74	4-3		2488.942	G	(6)	2.55	7.51	4-3	
2909.313	U	(1)	2.42	6.66	5-5								
2887.36	W	(1)	2.39	6.67	6-5	a 3H -12° (150)	2956.86	U	(2n)	2.68	6.85	5-5	a 3G -x $^1H^o$ (165)

Fe II

IP 16.16 Anal A List B June 1950

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* and §§=Blend Fe I and Fe II, as well as blend Fe II and Fe II

Fe II

Fe II

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2599.395	A	14	0.00	4.75	4½-4½	a 4D - z 4D°	2146.058	B	10b	0.05	5.80	3½-2½	a 4D - z 4P°
2611.873	A	13	0.05	4.77	3½-3½	(1)	2139.676	B	25b	0.08	5.85	2½-1½	(6)
2617.618	A	12	0.08	4.80	2½-2½		2137.735	B	15b	0.11	5.88	1½-0½	
2620.408	A	6	0.11	4.82	1½-1½		2159.152	B	10b	0.08	5.80	2½-2½	
2621.669	A	10	0.12	4.83	0½-0½		2153.874	B	1	0.12	5.85	0½-1½?	
2585.876	A	13	0.00	4.77	4½-3½								
2598.369	A	14	0.05	4.80	3½-2½								
2607.086	A	13	0.08	4.82	2½-2½								
2613.820	A	13	0.11	4.83	1½-0½								
2625.664	A	13	0.05	4.75	3½-4½								
2631.321	A	13	0.08	4.77	2½-3½								
*2631.045	A	13	0.11	4.80	1½-2½								
2628.291	A	13	0.12	4.82	0½-1½								
2382.034	A	9	0.00	5.18	4½-5½	a 4D - z 4F°	1608.446	B	35	0.00	7.68	4½-3½	a 4D - z 4P°
2395.627	A	9	0.05	5.20	3½-4½	(2)	1621.685	B	30	0.05	7.66	3½-2½	(7)
2404.882	A	9	0.08	5.21	2½-3½		1631.124	B	30	0.08	7.65	2½-1½	
2410.521	A	9	0.11	5.23	1½-2½		1618.464	B	25	0.05	7.68	3½-3½	
2413.308	A	9	0.12	5.23	0½-1½		1629.155	B	30	0.08	7.66	2½-2½	
2373.733	A	8	0.00	5.20	4½-4½		1636.334	B	30	0.11	7.65	1½-1½	
2388.629	A	9	0.05	5.21	3½-3½		1625.919	B	15	0.08	7.68	2½-3½	
*2399.237	A	9	0.08	5.23	2½-2½		1634.353	B	20	0.11	7.66	1½-2½	
2406.660	A	9	0.11	5.23	1½-1½		1639.403	B	30	0.12	7.65	0½-1½	
2411.062	A	9	0.12	5.24	0½-0½								
*2366.864	A	1	0.00	5.21	4½-3½								
2383.060	A	4	0.05	5.23	3½-2½								
2395.416	A	7	0.08	5.23	2½-1½								
2404.430	A	7	0.11	5.24	1½-0½								
2343.495	A	8	0.00	5.27	4½-3½	a 4D - z 4P°	1260.542	B	20	0.00	9.79	4½-3½	a 4D - z 4P°
2332.798	A	8	0.05	5.34	3½-2½	(3)	1267.437	B	25	0.05	9.79	3½-2½	(9)
2327.391	A	7	0.08	5.39	2½-1½		1272.638	B	15	0.08	9.78	2½-1½	
2364.825	A	8	0.05	5.27	3½-3½		1266.694	B	20	0.05	9.79	3½-3½	
2348.300	A	8	0.08	5.34	2½-2½		1272.001	B	25b	0.08	9.79	2½-2½	
2338.005	A	8	0.11	5.39	1½-1½		1275.801	B	20	0.11	9.78	1½-1½	
2380.757	A	7	0.08	5.27	2½-3½		1271.235	B	1	0.08	9.79	2½-3½	
*2359.111	A	8	0.11	5.34	1½-2½		1275.154	B	15	0.11	9.79	1½-2½	
2344.278	A	8	0.12	5.39	0½-1½								
2260.078	A	1	0.00	5.46	4½-4½	a 4D - z 4F°	1144.946	B	35hb	0.00	10.78	4½-5½	a 4D - z 4F°
2253.119	A	1	0.05	5.52	3½-3½	(4)	1148.295	B	30	0.05	10.80	3½-4½	(10)
2250.937	A	1	0.08	5.57	2½-2½		1151.163	B	25	0.08	10.81	2½-3½	
2250.171	A	0	0.11	5.59	1½-1½		1153.281	B	20	0.11	10.81	1½-2½	
2236.680	A	tr	0.05	5.57	3½-2½		1154.401	B	20	0.12	10.81	0½-1½	
2279.918	A	2	0.05	5.46	3½-4½		1143.235	B	25	0.00	10.80	4½-4½	
2267.584	A	1	0.08	5.52	2½-3½		1147.413	B	25	0.05	10.81	3½-3½	
2260.853	A	1	0.11	5.57	1½-2½		1150.689	B	20	0.08	10.81	2½-2½	
2255.979	A	0	0.12	5.59	0½-1½		1152.882	B	20	0.11	10.81	1½-1½	
m2249.18	P	Fe II	0.00	5.49	4½-3½	a 4D - z 4D°	1153.955	B	15	0.12	10.82	0½-0½	
2251.556	A	0	0.05	5.53	3½-2½	(5)	*1142.334	B	25	0.00	10.81	4½-3½	
2254.401	A	0	0.11	5.58	1½-0½		1146.963	B	15	0.05	10.81	3½-2½	
*2268.844	A	0d	0.05	5.49	3½-3½		1150.292	B	20	0.08	10.81	2½-1½	
2265.991	A	0	0.08	5.53	2½-2½		1152.440	B	15	0.11	10.82	1½-0½	
2262.686	A	1	0.11	5.56	1½-1½								
2260.228	A	1	0.12	5.58	0½-0½								
2268.562	A	0	0.12	5.56	0½-1½								
							1133.678	B	25	0.00	10.89	4½-3½	a 4D - 1°
							1138.642	B	25	0.05	10.89	3½-3½	(11)
							*1142.334	B	25	0.08	10.89	2½-3½	
							1121.987	B	25	0.00	11.00	4½-3½	a 4D - 2°
							1126.850	B	20	0.05	11.00	3½-3½	(12)
							1130.428	B	25b	0.08	11.00	2½-3½	
							1122.858	B	25	0.05	11.04	3½-2½	a 4D - 3°
							1126.425	B	20	0.08	11.04	2½-2½	(13)
							1128.909	B	20	0.11	11.04	1½-2½	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1124.134	B	20	0.08	11.06	2½-1½	a ⁴D — 4°	2732.441	A	2	0.23	4.75	4½-4½	a ⁴F — z ⁴D° (32)
1126.603	B	20	0.11	11.06	1½-1½		2759.336	A	2	0.30	4.77	3½-3½	
1128.074	B	25b	0.12	11.06	0½-1½		2775.339	A	1	0.35	4.80	2½-2½	
1106.362	B	5	0.00	11.16	4½-	a ⁴D — 6°	*2717.533	A	0	0.23	4.77	4½-3½	
1111.114	B	15	0.05	11.16	3½-	(15)	2790.752	A	0	0.35	4.77	2½-3½	
1112.086	B	35	0.12	11.22	0½-1½	a ⁴D — 9°	2511.375	A	2	0.30	5.21	3½-3½	a ⁴F — z ⁴F° (33)
						(16)	2531.082	A	1	0.35	5.23	2½-2½	
1102.758	B	1	0.05	11.24	3½-2½	a ⁴D — 11°	2505.217	A	2	0.30	5.23	3½-2½	
1106.215	B	15	0.08	11.24	2½-2½	(17)	2526.837	A	1	0.35	5.23	2½-1½	
1096.886	B	30	0.00	11.25	4½-3½	a ⁴D — w ⁴P°	2451.106	A	2	0.23	5.27	4½-3½	a ⁴F — z ⁴P° (34)
1096.616	B	20	0.05	11.30	3½-2½	(18)	2449.739	A	1	0.30	5.34	3½-2½	
1096.793	B	20	0.08	11.34	2½-1½		2485.076	A	0	0.30	5.27	3½-3½	
1101.538	B	20	0.05	11.25	3½-3½								
1100.026	B	20	0.08	11.30	2½-2½		2359.999	A	8	0.23	5.46	4½-4½	a ⁴F — z ⁴F° (35)
1099.117	B	25h	0.11	11.34	1½-1½		2362.014	A	6	0.30	5.52	3½-3½	
1104.978	B	1	0.08	11.25	2½-3½		2366.591	A	5	0.35	5.57	2½-2½	
1102.385	B	8	0.11	11.30	1½-2½		2370.494	A	5	0.38	5.59	1½-1½	
1100.525	B	20	0.12	11.34	0½-1½		2331.308	A	7	0.23	5.52	4½-3½	
1063.982	B	15	0.00	11.60	4½-3½	a ⁴D — 13°	2343.958	A	6	0.30	5.57	3½-2½	
1068.356	B	30	0.05	11.60	3½-3½	(19)	2354.884	A	5	0.35	5.59	2½-1½	
1071.596	B	30	0.08	11.60	2½-3½		2391.475	A	4	0.30	5.46	3½-4½	
1069.038	B	15	0.08	11.63	2½-2½	a ⁴D — 14°	2384.999	A	3	0.35	5.52	2½-3½	
1071.260	B	5	0.11	11.63	1½-2½	(20)	2382.356	A	3	0.38	5.57	1½-2½	
1055.269	B	25	0.00	11.70	4½-3½	a ⁴D — 15°	2348.118	A	8	0.23	5.49	4½-3½	a ⁴F — z ⁴D° (36)
1059.571	B	20	0.05	11.70	3½-3½	(21)	2360.287	A	8	0.30	5.53	3½-2½	
1062.758	B	20	0.08	11.70	2½-3½		2368.593	A	7	0.35	5.56	2½-1½	
935.783	B	0	0.00	13.66	4½-3½	a ⁴D — 16°	2375.192	A	7	0.38	5.58	1½-0½	
939.159	B	20	0.05	13.66	3½-3½	(22)	2379.275	A	7	0.30	5.49	3½-3½	
941.660	B	12	0.08	13.66	2½-3½		2383.242	A	7	0.35	5.53	2½-2½	
936.484	B	8	0.05	13.67	3½-	a ⁴D — 17°	2384.386	A	7	0.38	5.56	1½-1½	
*938.967	B	10	0.08	13.67	2½-	(23)	2402.597	A	3	0.35	5.49	2½-3½	
							*2399.237	A	9	0.38	5.53	1½-2½	
Vac													
926.900	B	25	0.00	13.68	4½-3½	a ⁴D — 20°	1724.963	B	8	0.30	7.46	3½-2½	a ⁴F — y ⁴P° (37)
930.219	B	30	0.05	13.68	3½-3½	(24)	1709.560	B	0	0.35	7.57	2½-1½	
*932.687	B	30	0.08	13.68	2½-3½								
926.220	B	60	0.00	13.68	4½-	a ⁴D — 21°	1702.045	B	25	0.23	7.48	4½-5½	a ⁴F — z ⁴G° (38)
929.538	B	30	0.05	13.68	3½-	(25)	1713.002	B	20	0.30	7.51	3½-4½	
928.107	B	30	0.05	13.68	3½-2½	a ⁴D — 22°	1720.621	B	20	0.35	7.53	2½-3½	
930.558	B	30	0.08	13.68	2½-2½	(26)	1726.394	B	12	0.38	7.54	1½-2½	
932.244	B	30	0.11	13.68	1½-2½		1696.800	B	8	0.23	7.51	4½-4½	
930.030	B	30	0.08	13.68	2½-1½	a ⁴D — 23°	1708.627	B	8	0.30	7.53	3½-3½	
931.709	B	10	0.11	13.68	1½-1½	(27)	1718.123	B	2	0.35	7.54	2½-2½	
*932.687	B	30	0.12	13.68	0½-1½		1706.179	B	1	0.30	7.54	3½-2½	
923.884	B	30	0.00	13.68	4½-3½	a ⁴D — 24°	1686.717	B	2	0.35	7.67	2½-1½?	a ⁴F — z ²D° (39)
927.176	B	30	0.05	13.68	3½-3½	(28)	1716.569	B	2	0.35	7.54	2½-2½	
929.612	B	30	0.08	13.68	2½-3½		1724.847	B	8	0.38	7.54	1½-2½	
928.470	B	20	0.08	13.68	2½-1½	a ⁴D — 25°	*1670.759	B	25	0.23	7.62	4½-3½	a ⁴F — y ⁴D° (40)
930.165	B	30	0.11	13.68	1½-1½	(29)	1659.487	B	20	0.30	7.74	3½-2½	
931.142	B	25	0.12	13.68	0½-1½		1663.226	B	15	0.35	7.77	2½-1½	
924.970	B	15	0.08	13.69	2½-1½	a ⁴D — 27°	1674.716	B	10	0.38	7.76	1½-0½	
926.618	B	10	0.11	13.69	1½-1½	(30)	1686.457	B	8	0.30	7.62	3½-3½	
927.632	B	8	0.12	13.69	0½-1½		*1670.759	B	25	0.35	7.74	2½-2½	
896.504	B	1	0.05	13.73	3½-2½	a ⁴D — 29°	1671.010	B	1	0.38	7.77	1½-1½	
898.776	B	0	0.08	13.73	2½-2½	(31)	1698.190	B	0	0.35	7.62	2½-3½?	
900.360	B	5	0.11	13.73	1½-2½		1658.785	B	15	0.23	7.67	4½-4½	a ⁴F — y ⁴F° (41)
							1676.871	B	1	0.30	7.66	3½-3½	
							1685.953	B	5	0.35	7.67	2½-2½	
							1691.289	B	8	0.38	7.68	1½-1½	
							1674.258	B	2	0.30	7.67	3½-4½	
							1693.961	B	0	0.38	7.67	1½-2½	

Fe II—Continued

Fe II—Continued

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Vac							Air						
1637.400	B	15	0.23	7.77	4½-3½	a 'F -x 'D°	2926.584	A	12	0.98	5.20	3½-4½	a 'D -z 'F° (60)
1643.588	B	15	0.30	7.81	3½-2½		2953.774	A	11	1.04	5.21	2½-3½	
1649.444	B	15b	0.35	7.83	2½-1½		2970.510	A	10	1.07	5.23	1½-2½	
1654.484	B	5	0.38	7.85	1½-0½		2979.349	A	8	1.09	5.23	0½-1½	
1652.489	B	0	0.30	7.77	3½-3½		2916.150	A	2	0.98	5.21	3½-3½	
1662.369	B	0	0.38	7.81	1½-2½		2945.262	A	2	1.04	5.23	2½-2½	
							2975.938	A	5	1.09	5.24	0½-0½	
1612.814	B	20	0.23	7.89	4½-5½	a 'F -y 'G°	2907.853	A	3	0.98	5.23	3½-2½	
1625.525	B	20	0.30	7.89	3½-4½		2939.506	A	5	1.04	5.23	2½-1½	
1633.907	B	15	0.35	7.91	2½-3½		2961.272	A	5	1.07	5.24	1½-0½	
1640.167	B	12	0.38	7.91	1½-2½								
1610.933	B	15h	0.23	7.89	4½-4½		2880.750	A	9	0.98	5.27	3½-3½	a 'D -z 'P° (61)
1623.102	B	8	0.30	7.91	3½-3½		2868.874	A	5	1.04	5.34	2½-2½	
1632.672	B	1	0.35	7.91	2½-2½		2861.187	A	3	1.07	5.39	1½-1½	
							2917.465	A	4	1.04	5.27	2½-3½	
1569.670	B	12	0.23	8.10	4½-5½	a 'F -x 'G°	2892.822	A	3	1.07	5.34	1½-2½	
1580.635	B	25b	0.30	8.11	3½-4½		2755.733	A	15	0.98	5.46	3½-4½	a 'D -z 'F° (62)
1584.954	B	15	0.35	8.14	2½-3½		2749.324	A	14	1.04	5.52	2½-3½	
1588.295	B	10	0.38	8.16	1½-2½		2746.487	A	14	1.07	5.57	1½-2½	
1566.825	B	20	0.23	8.11	4½-4½		2743.196	A	14	1.09	5.59	0½-1½	
1574.778	B	0	0.30	8.14	3½-3½		2716.683	A	2	0.98	5.52	3½-3½	
1581.293	B	8	0.35	8.16	2½-2½		2724.879	A	9	1.04	5.57	2½-2½	
							2730.735	A	11	1.07	5.59	1½-1½	
1559.106	B	20	0.23	8.15	4½-4½	a 'F -x 'F°	2692.826	A	5	0.98	5.57	3½-2½	
1563.790	B	25	0.30	8.19	3½-3½		2709.373	A	1	1.04	5.59	2½-1½	
1570.248	B	20	0.35	8.21	2½-2½								
1574.931	B	20	0.38	8.22	1½-1½		2739.545	A	15	0.98	5.49	3½-3½	a 'D -z 'D° (63)
1550.260	B	1	0.23	8.19	4½-3½		2746.978	A	14	1.04	5.53	2½-2½	
1568.031	B	8	0.35	8.22	2½-1½		2749.178	A	13	1.07	5.56	1½-1½	
1572.750	B	1	0.30	8.15	3½-4½		2749.482	A	12	1.09	5.58	0½-0½	
1573.831	B	5	0.35	8.19	2½-3½		2714.414	A	13	0.98	5.53	3½-2½	
1577.158	B	1	0.38	8.21	1½-2½		2727.538	A	13	1.04	5.56	2½-1½	
							2736.968	A	12	1.07	5.58	1½-0½	
1558.543	B	10	0.35	8.27	2½-2½?	a 'F -y 'D°	2772.719	A	1	1.04	5.49	2½-3½	
1558.706	B	10	0.38	8.30	1½-1½?		2768.940	A	8	1.07	5.53	1½-2½	
							2761.813	A	9	1.09	5.56	0½-1½	
1412.834	B	12	0.23	8.97	4½-3½	a 'F -w 'D°	2562.535	A	13	0.98	5.80	3½-2½	a 'D -z 'P° (64)
1424.747	B	12	0.30	8.96	3½-2½		2563.472	A	12	1.04	5.85	2½-1½	
1424.047	B	8	0.30	8.97	3½-3½		2566.908	A	9	1.07	5.88	1½-0½	
							2591.542	A	10	1.04	5.80	2½-2½	
1130.874	B	2	0.23	11.15	4½-3½	a 'F -5°	2582.582	A	10	1.07	5.85	1½-1½	
1138.039	B	5	0.30	11.15	3½-3½		2577.920	A	9	1.09	5.88	0½-0½	
							2611.075	A	6	1.07	5.80	1½-2½	
1129.777	B	12	0.23	11.16	4½-	a 'F -6°	2593.722	A	7	1.09	5.85	0½-1½	
1128.180	B	5	0.30	11.24	3½-2½	a 'F -11°	Vac						
1133.413	B	25	0.35	11.24	2½-2½		1859.744	B	15	0.98	7.62	3½-3½	a 'D -y 'D° (65)
							1841.701	B	10h	1.04	7.74	2½-2½	
1097.782	B	2	0.38	11.63	1½-2½	a 'F -14°	1842.256	B	0	1.07	7.77	1½-1½	
							1826.991	B	1	0.98	7.74	3½-2½	
1076.556	B	2	0.23	11.70	4½-3½	a 'F -15°	1874.931	B	0	1.04	7.62	2½-3½	
							1851.517	B	1	1.07	7.74	1½-2½	
952.470	B	10	0.23	13.66	4½-3½	a 'F -16°	1818.509	B	2	0.98	7.77	3½-3½	a 'D -x 'D° (66)
							*1822.150	B	1	{1.04	7.81	2½-2½	
954.786	B	2	0.30	13.67	3½-	a 'F -17°	1833.071	B	0	1.04	7.77	2½-3½	
							1831.724	B	1	1.07	7.81	1½-2½	
943.267	B	12	0.23	13.68	4½-3½	a 'F -20°	1781.702	B	2	1.07	8.00	1½-0½	a 'D -z 'P° (67)
942.589	B	5	0.23	13.68	4½-	a 'F -21°	1635.389	B	35	0.98	8.53	3½-2½	a 'D -x 'P° (68)
							1641.761	B	25	1.04	8.56	2½-1½	
945.095	B	25	0.30	13.68	3½-3½	a 'F -24°	1646.187	B	20	1.07	8.57	1½-0½	
							1647.161	B	25	1.04	8.53	2½-2½	
*938.967	B	10	0.23	13.68	4½-3½	a 'F -26°	1649.583	B	20	1.07	8.56	1½-1½	
*943.910	B	15	0.30	13.68	3½-3½		1650.709	B	20	1.09	8.57	0½-0½	
							1655.042	B	1	1.07	8.53	1½-2½	
							1654.105	B	5	1.09	8.56	0½-1½	
*943.910	B	15	0.35	13.69	2½-1½	a 'F -27°	1413.707	B	25	0.98	9.71	3½-2½	a 'D -w 'D° (69)
							1214.409	B	10	0.98	11.15	3½-3½	a 'D -5° (70)
							1220.882	B	5	1.04	11.15	2½-3½	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Vac 1213.149	B	20	0.98	11.16	$3\frac{1}{2}-$	$a^4D - 6^\circ$ (71)	Vac 1290.204	B	15	1.66	11.23	$2\frac{1}{2}-1\frac{1}{2}$	$a^4P - 10^\circ \dagger$ (88)
1213.764	B	20	1.07	11.24	$1\frac{1}{2}-2\frac{1}{2}$	$a^4D - 11^\circ$ (72)							
1159.347	B	20	0.98	11.63	$3\frac{1}{2}-2\frac{1}{2}$	$a^4D - 14^\circ$ (73)	Air 2158.518	B	25	1.96	7.67	$4\frac{1}{4}-4\frac{1}{2}$	$a^2G - y^4F^\circ$ (89)
1165.269	B	12	1.04	11.63	$2\frac{1}{2}-2\frac{1}{2}$		2187.678	B	10	2.02	7.66	$3\frac{1}{2}-3\frac{1}{2}$	
2183.301	B						2183.301	B	12	2.02	7.67	$3\frac{1}{2}-4\frac{1}{2}?$	
1011.037	B	25	0.98	13.66	$3\frac{1}{2}-3\frac{1}{2}$	$a^4D - 16^\circ$ (74)	2162.023	B	20	1.96	7.66	$4\frac{1}{2}-4\frac{1}{2}$	$a^2G - z^2G^\circ$ (90)
1015.520	B	20	1.04	13.66	$2\frac{1}{2}-3\frac{1}{2}$		2175.445	B	25	2.02	7.69	$3\frac{1}{2}-3\frac{1}{2}$	
1007.975	B	25	0.98	13.67	$3\frac{1}{2}-$	$a^4D - 17^\circ$ (75)	2078.164	B	8	1.96	7.89	$4\frac{1}{4}-4\frac{1}{2}$	$a^2G - y^4G^\circ$ (91)
1012.417	B	25	1.04	13.67	$2\frac{1}{2}-$		2096.990	B	0b	2.02	7.91	$3\frac{1}{2}-3\frac{1}{2}$	
2074.195	B						2094.985	B	8b	1.96	7.91	$4\frac{1}{2}-3\frac{1}{2}$	
2094.985	B						2094.985	B	2	2.02	7.91	$3\frac{1}{2}-2\frac{1}{2}$	
1007.657	B	20	0.98	13.67	$3\frac{1}{2}-2\frac{1}{2}$	$a^4D - 18^\circ$ (76)	2063.672	B	25hb	1.96	7.94	$4\frac{1}{2}-3\frac{1}{2}$	$a^2G - z^2F^\circ \dagger$ (92)
1012.088	B	20	1.04	13.67	$2\frac{1}{2}-2\frac{1}{2}$		2080.246	B	20	2.02	7.95	$3\frac{1}{2}-2\frac{1}{2}$	
1015.083	B	10	1.07	13.67	$1\frac{1}{2}-2\frac{1}{2}$		2040.687	B	25	1.96	8.00	$4\frac{1}{2}-4\frac{1}{2}$	$a^2G - y^2G^\circ$ (93)
2051.028	B						2029.182	B	25	2.02	8.04	$3\frac{1}{2}-3\frac{1}{2}$	
2029.182	B						2029.182	B	8	1.96	8.04	$4\frac{1}{2}-3\frac{1}{2}$	
Air													
2984.831	A	15	1.66	5.80	$2\frac{1}{2}-2\frac{1}{2}$	$a^4P - z^4P^\circ$ (78)	2018.772	B	25	1.96	8.07	$4\frac{1}{2}-5\frac{1}{2}$	$a^2G - z^2H^\circ \dagger$ (94)
2965.036	A	10	1.69	5.85	$1\frac{1}{2}-1\frac{1}{2}$		2032.407	B	25	2.02	8.09	$3\frac{1}{2}-4\frac{1}{2}$	
2964.629	A	9	1.72	5.88	$0\frac{1}{2}-0\frac{1}{2}$								
2947.658	A	13	1.66	5.85	$2\frac{1}{2}-1\frac{1}{2}$								
2944.399	A	13	1.69	5.88	$1\frac{1}{2}-0\frac{1}{2}$		1993.289	B	8b	1.96	8.15	$4\frac{1}{2}-4\frac{1}{2}$	$a^2G - z^4F^\circ$ (95)
3002.650	A	13	1.69	5.80	$1\frac{1}{2}-2\frac{1}{2}$		1935.296	B	15	1.96	8.33	$4\frac{1}{2}-5\frac{1}{2}$	$a^2G - y^2H^\circ$ (96)
2985.545	A	13	1.72	5.85	$0\frac{1}{2}-1\frac{1}{2}$		1936.781	B	20b	2.02	8.39	$3\frac{1}{2}-4\frac{1}{2}$	
1917.337	B						1917.337	B	15b	1.96	8.39	$4\frac{1}{2}-4\frac{1}{2}$	
*2130.259	B	15	1.66	7.46	$2\frac{1}{2}-2\frac{1}{2}$	$a^4P - y^4P^\circ \dagger$ (80)	1860.040	B	20	1.96	8.59	$4\frac{1}{2}-3\frac{1}{2}$	$a^2G - y^2P^\circ$ (97)
*2097.512	B	25b	1.69	7.57	$1\frac{1}{2}-1\frac{1}{2}$		1876.835	B	15	2.02	8.60	$3\frac{1}{2}-2\frac{1}{2}$	
2108.139	B	15	1.69	7.54	$1\frac{1}{2}-2\frac{1}{2}$	$a^4P - z^2D^\circ$ (81)	1835.869	B	15	1.96	8.68	$4\frac{1}{2}-4\frac{1}{2}$	$a^2G - z^2G^\circ$ (98)
2073.147	B	8h	1.72	7.67	$0\frac{1}{2}-1\frac{1}{2}$		1846.581	B	12	2.02	8.71	$3\frac{1}{2}-3\frac{1}{2}$	
2057.332	B	12	1.66	7.66	$2\frac{1}{2}-3\frac{1}{2}$	$a^4P - y^4F^\circ \dagger$ (82)	1772.518	B	15	1.96	8.92	$4\frac{1}{2}-5\frac{1}{2}$	$a^2G - z^2H^\circ \dagger$ (99)
2020.739	B	25	1.66	7.77	$2\frac{1}{2}-3\frac{1}{2}$	$a^4P - x^4D^\circ$ (83)	1760.415	B	20	1.96	8.97	$4\frac{1}{2}-4\frac{1}{2}?$	$a^2G - w^4F^\circ$ (100)
2015.500	B	20	1.69	7.81	$1\frac{1}{2}-2\frac{1}{2}$		1769.667	B	1	1.96	8.93	$4\frac{1}{2}-3\frac{1}{2}$	
2017.090	B	15	1.72	7.83	$0\frac{1}{2}-1\frac{1}{2}$								
2007.452	B	15b	1.66	7.81	$2\frac{1}{2}-2\frac{1}{2}$		1746.816	B	20	1.96	9.02	$4\frac{1}{2}-4\frac{1}{2}$	$a^2G - w^2G^\circ$ (101)
2007.711	B	12	1.69	7.83	$1\frac{1}{2}-1\frac{1}{2}$		1761.379	B	25	2.02	9.03	$3\frac{1}{2}-3\frac{1}{2}$	
2013.268	B	15	1.72	7.85	$0\frac{1}{2}-0\frac{1}{2}$		1673.470	B	15	1.96	9.33	$4\frac{1}{2}-3\frac{1}{2}$	$a^2G - w^2F^\circ$ (102)
2003.881	B	2	1.69	7.85	$1\frac{1}{2}-0\frac{1}{2}$		1679.388	B	15	2.02	9.37	$3\frac{1}{2}-2\frac{1}{2}$	
Vac													
1709.678	B	15	1.66	8.88	$2\frac{1}{2}-2\frac{1}{2}$	$a^4P - w^4P^\circ$ (84)	1364.590	B	12	1.96	11.00	$4\frac{1}{2}-3\frac{1}{2}$	$a^2G - 2^\circ$ (103)
1715.036	B	0	1.72	8.91	$0\frac{1}{2}-0\frac{1}{2}$								
1707.411	B	2	1.66	8.89	$2\frac{1}{2}-1\frac{1}{2}$								
1708.259	B	1	1.69	8.91	$1\frac{1}{2}-0\frac{1}{2}$								
1715.507	B	12	1.69	8.88	$1\frac{1}{2}-2\frac{1}{2}$								
1720.042	B	10	1.72	8.89	$0\frac{1}{2}-1\frac{1}{2}$								
1689.821	B	10b	1.66	8.97	$2\frac{1}{2}-3\frac{1}{2}$	$a^4P - w^4D^\circ$ (85)	2342.238	A	2	2.27	7.54	$1\frac{1}{2}-2\frac{1}{2}$	$a^2P - z^4G^\circ$ (104)
1690.781	B	8	1.66	8.96	$2\frac{1}{2}-2\frac{1}{2}$		2339.408	A	2	2.27	7.54	$1\frac{1}{2}-2\frac{1}{2}$	$a^2P - z^2D^\circ$ (105)
1699.199	B	2	1.69	8.95	$1\frac{1}{2}-1\frac{1}{2}$		2312.028	A	1	2.33	7.67	$0\frac{1}{2}-1\frac{1}{2}$	
m1708.68	P	Fe II	1.72	8.94	$0\frac{1}{2}-0\frac{1}{2}$		2284.224	A	On	2.27	7.67	$1\frac{1}{2}-1\frac{1}{2}$	
1693.477	B	0	1.66	8.95	$2\frac{1}{2}-1\frac{1}{2}$		2151.095	B	25	2.27	8.00	$1\frac{1}{2}-1\frac{1}{2}$	$a^2P - z^2P^\circ$ (106)
1701.952	B	2	1.69	8.94	$1\frac{1}{2}-0\frac{1}{2}$		2177.025	B	10	2.33	8.00	$0\frac{1}{2}-0\frac{1}{2}$	
1296.088	B	20	1.69	11.21	$1\frac{1}{2}-$	$a^4P - 8^\circ$ (86)	2152.373	B	12	2.27	8.00	$1\frac{1}{2}-0\frac{1}{2}$	
1299.984	B	0	1.72	11.21	$0\frac{1}{2}-$		2075.683	B	5	2.27	8.21	$1\frac{1}{2}-2\frac{1}{2}$	$a^2P - x^2F^\circ$ (107)
1291.594	B	15	1.66	11.22	$2\frac{1}{2}-1\frac{1}{2}$	$a^4P - 9^\circ$ (87)	2094.641	B	1	2.33	8.22	$0\frac{1}{2}-1\frac{1}{2}$	
1294.914	B	12	1.69	11.22	$1\frac{1}{2}-1\frac{1}{2}$		*2071.821	B	10	2.27	8.22	$1\frac{1}{2}-1\frac{1}{2}$	
1298.815	B	2	1.72	11.22	$0\frac{1}{2}-1\frac{1}{2}$								

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2087.527 2110.724	B B	25 15	2.27 2.33	8.18 8.18	0½-0½ 0½-0½	a ³P -z ¹S° (108)	Air 2506.429 *2497.709 2449.272	A A 0	2 3 2.53	2.53 2.63 2.53	7.46 7.57 7.57	2½-2½ 1½-1½ 2½-1½	a ³D -y ⁴P° (128)
2055.270 2066.005	B B	20 15	2.27 2.33	8.27 8.30	1½-2½ 0½-1½	a ³P -y ²D° (109)	*2463.726§ 2449.185 2512.727	A A tr	2 1 2.63	2.53 2.63 2.63	7.54 7.67 7.54	2½-2½ 1½-1½ 1½-2½	a ³D -z ²D° (129)
Vac 1731.038 1733.403	B B	10 1	2.27 2.33	9.40 9.45	1½-1½ 0½-0½	a ³P -x ²P° (110)	2425.904 2415.776	A A	2 0	2.53 2.63	7.62 7.74	2½-3½ 1½-2½	a ³D -y ⁴D° (130)
1360.870	B	5	2.27	11.34	1½-1½	a ³P -w ⁶P° (111)	2406.086	A	1	2.53	7.66	2½-3½	a ³D -y ⁴F° (131)
Air *2481.576 2510.565	A A	2 1	2.51 2.57	7.48 7.48	5½-5½ 4½-5½	a ³H -z ⁴G° (112)	2283.991 2318.534	A A	1 1	2.53 2.63	7.94 7.95	2½-3½ 1½-2½	a ³D -z ²F° (132)
2468.561 2477.487	A A	1 1	2.51 2.57	7.51 7.55	5½-6½ 4½-3½	a ³H -z ⁴H° (113)	2255.759 2298.225 2296.769	A A A	1 1 0	2.53 2.63 2.63	8.00 8.00 8.00	2½-1½ 1½-0½ 1½-1½	a ³D -z ²P° (133)
2427.197 *2451.354 2428.079	A A A	1h 1 0	2.51 2.57 2.51	7.60 7.60 7.59	5½-6½ 4½-5½ 5½-4½	a ³H -z ⁴I° (114)	*2210.952 2172.989 2206.582	B B B	5 15 2	2.63 2.53 2.63	8.21 8.21 8.22	1½-2½ 2½-2½ 1½-1½	a ³D -x ⁴F°† (134)
2422.932	A	1	2.57	7.66	4½-3½	a ³H -y ⁴F° (115)	2150.618 2174.849 2138.103 2187.868	B B B B	20b 8 20 15	2.53 2.63 2.53 2.63	8.27 8.30 8.30 8.27	2½-2½ 1½-1½ 2½-1½?	a ³D -y ⁴D° (135)
2394.892 2407.940 2421.898	A A A	3 2 0	2.51 2.57 2.57	7.66 7.69 7.66	5½-4½ 4½-3½ 4½-4½	a ³H -z ⁴G° (116)	2077.507	B	12	2.63	8.57	1½-0½	a ³D -z ⁴P° (136)
2382.902 2388.387	A A	3 3	2.51 2.57	7.69 7.74	5½-6½ 4½-5½	a ³H -z ⁴I° (117)	2036.435	B	20	2.53	8.59	2½-3½	a ³D -y ⁴F° (137)
2220.388 2233.917 *2210.952 2243.578	B A B A	25 1 5 tr	2.51 2.57 2.51 2.57	8.07 8.09 8.09 8.07	5½-5½ 4½-4½ 5½-4½ 4½-5½	a ³H -z ⁴H° (118)	2067.917 1918.114 1922.797	B B B	20 2 20b	2.63 2.53 2.53	8.60 8.97 8.95	1½-2½ 2½-3½ 2½-1½	Vac a ³D -w ⁴D° (138)
2167.401 2183.468 2161.582	B B B	12 8 20	2.51 2.57 2.51	8.20 8.22 8.22	5½-5½ 4½-4½? 5½-4½	a ³H -y ⁴H° (119)	1904.784 1932.477 1903.370	B B B	15 15 1	2.53 2.63 2.53	9.01 9.02 9.02	2½-3½ 1½-2½ 2½-2½	a ³D -x ⁴F° (139)
2119.050 2118.195 *2097.512	B B B	12 8 25b	2.51 2.57 2.51	8.33 8.39 8.39	5½-5½ 4½-4½ 5½-4½	a ³H -y ⁴H° (120)	1898.538 *1927.481	B B	10 1hb	2.53 (2.63 2.63)	9.04 9.03 9.04	2½-1½ 1½-0½ 1½-1½	a ³D -y ⁴P° (140)
2048.492	B	5	2.57	8.59	4½-3½	a ³H -y ⁴F° (121)	1848.768 1880.046 1876.173	B B B	12 2 8h	2.53 2.63 2.63	9.21 9.20 9.21	2½-2½ 1½-1½ 1½-2½	a ³D -x ⁴D° (141)
2000.368 2010.688	B	30 25	2.51 2.57	8.68 8.71	5½-4½ 4½-3½	a ³H -z ⁴G° (122)	1798.163 1809.316	B B	10 10	2.53 2.63	9.40 9.45	2½-1½ 1½-0½	a ³D -x ⁴P° (142)
Vac 1925.987 1948.372	B B	20b 10b	2.51 2.57	8.92 8.90	5½-5½ 4½-4½	a ³H -x ⁴H° (123)	1417.744	B	20	2.63	11.34	1½-1½?	a ³D -w ⁶P° (143)
1895.675 1910.669	B B	10h 8	2.51 2.57	9.02 9.03	5½-4½ 4½-3½	a ³H -w ⁶G° (124)	Air	A	9	2.57	7.37	2½-1½	b ⁴P -z ¹S° (144)
1877.462 1888.729 1894.006	B B B	20 20 10b	2.51 2.57 2.57	9.09 9.10 9.09	5½-5½ 4½-4½ 4½-5½	a ³H -w ⁶H° (125)	2574.363 2641.124	A A	2	2.69	7.37	1½-1½	b ⁴P -y ⁴P° (145)
1864.743 1880.976 1864.656	B B B	20 20 2	2.51 2.57 2.51	9.13 9.13 9.13	5½-6½ 4½-5½ 5½-5½	a ³H -y ⁶I° (126)	2526.292 *2529.545 2588.182 *2468.292 2548.741 2590.548 2568.405	A A A A A A	9 10 3 4 7 4 6	2.57 2.69 2.77 2.57 2.69 2.69 2.77	7.46 7.57 7.53 7.57 7.53 7.46 7.57	2½-2½ 1½-1½ 0½-0½ 2½-1½ 1½-0½ 1½-2½ 0½-1½	b ⁴P -z ⁴G° (146)
Air 2553.738	A	2h	2.53	7.37	2½-1½	a ³D -z ⁶S° (127)	2548.325	A	4	2.69	7.54	1½-2½	b ⁴P -z ⁴G° (146)

Fe II—Continued

Fe II—Continued

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)	
			Low	High						Low	High			
Air														
2566.623	A	4	2.79	7.60	4½-5½	b 4F -z 4I°	2165.555	B	10	2.83	8.53	2½-2½	b 4F -x 4P°	
2583.047	A	2	2.82	7.59	3½-4½		2160.471	B	2	2.84	8.56	1½-1½		
2571.542	A	2	2.79	7.59	4½-4½									
2557.500	A	4	2.79	7.62	4½-3½	b 4F -y 4D°	*1999.430	B	10	2.79	8.97	4½-4½	b 4F -w 4P°	
2506.797	A	2h	2.82	7.74	3½-2½	(175)	Air							
*2497.817	A	7	2.83	7.77	2½-1½		2017.855	B	2	2.82	8.93	3½-3½		
2511.910	A	2	2.84	7.76	1½-0½?		2027.778	B	5	2.83	8.92	2½-2½		
*2568.879§	A	3	2.82	7.62	3½-3½		2034.461	B	1	2.84	8.91	1½-1½		
*2514.912	A	3	2.83	7.74	2½-2½									
*2503.560	A	5	2.84	7.77	1½-1½									
2577.431	A	1	2.83	7.62	2½-3½		*1999.430	B	10	2.79	8.97	4½-3½	b 4F -w D°	
2520.749	A	0	2.84	7.74	1½-2½		Air							
2528.676	A	tr	2.79	7.68	4½-3½	b 4F -y 4P°	2007.013	B	12	2.82	8.96	3½-2½		
2547.740	A	tr	2.82	7.66	3½-2½	(176)	2016.092	B	10	2.83	8.95	2½-1½		
2539.797	A	2	2.82	7.68	3½-3½		2023.715	B	1	2.84	8.94	1½-0½		
2548.166	A	0	2.83	7.68	2½-3½									
*2529.545	A	10	2.79	7.67	4½-4½	b 4F -y 4F°	Vac							
2546.667	A	8	2.82	7.66	3½-3½	(177)	1938.899	B	8b	2.84	9.21	1½-2½?	b 4F -x 4D°	
2549.453	A	8	2.83	7.67	2½-2½									
2549.399	A	8	2.84	7.68	1½-1½		*1476.054	B	10	2.79	11.16	4½-	b 4F - 6°	
2535.480	A	7	2.79	7.66	4½-3½									
2541.096	A	7	2.82	7.67	3½-2½									
2543.431	A	5	2.83	7.68	2½-1½									
*2540.669	A	6	2.82	7.67	3½-4½									
2555.066	A	5	2.83	7.66	2½-3½									
2555.447	A	5	2.84	7.67	1½-2½									
*2530.103	A	6	2.82	7.69	3½-3½	b 4F -z 2G°	Vac							
2545.513	A	1	2.82	7.66	3½-4½	(178)	1785.262	B	40	2.88	9.79	2½-3½	a 4S -x 4P°	
2538.393	A	1	2.83	7.69	2½-3½		1786.738	B	40	2.88	9.79	2½-2½	(191)	
							1787.997	B	35	2.88	9.78	2½-1½		
2480.155	A	8	2.79	7.77	4½-3½	b 4F -x 4D°	*1476.054	B	10	2.88	11.24	2½-2½	a 4S - 11°	
2470.661	A	7	2.82	7.81	3½-2½	(179)								
2466.811	A	7	2.83	7.83	2½-1½									
2466.670	A	7	2.84	7.85	1½-0½									
2490.856	A	6	2.82	7.77	3½-3½									
2478.568	A	6	2.83	7.81	2½-2½									
2472.426	A	5	2.84	7.83	1½-1½									
2424.141	A	8	2.79	7.89	4½-5½	b 4F -y 4G°	1128.530	B	10h	2.88	13.73	2½-2½	a 4S - 29°	
2430.073	A	7	2.82	7.89	3½-4½	(180)								
2432.259	A	7	2.83	7.91	2½-3½									
2434.942	A	7	2.84	7.91	1½-2½									
2419.892	A	1	2.79	7.89	4½-4½									
*2424.585	A	3	2.82	7.91	3½-3½									
2429.497	A	2	2.83	7.91	2½-2½									
2400.274	A	2	2.79	7.94	4½-3½	b 4F -z 2F°								
2402.255	A	2	2.82	7.95	3½-2½	(181)								
*2410.286	A	1n	2.82	7.94	3½-3½									
2415.068	A	3	2.84	7.95	1½-2½									
2369.232	A	1	2.79	8.00	4½-4½	b 4F -y 2G°								
2379.003	A	2	2.82	8.00	3½-4½	(182)								
2327.953	A	1	2.79	8.10	4½-5½	b 4F -x 4G°	2849.601	A	7	3.19	7.52	4½-5½	a 4G -z 4H°	
2331.076	A	1n	2.82	8.11	3½-4½	(183)	2855.676	A	9	3.21	7.53	3½-4½	(196)	
2325.296	A	1	2.83	8.14	2½-3½		2848.046	A	8	3.22	7.55	2½-3½		
2322.326	A	1	2.84	8.16	1½-2½		2819.327	A	3	3.14	7.52	5½-5½		
2321.687	A	1	2.79	8.11	4½-4½		2841.354	A	2	3.19	7.53	4½-4½		
2318.343	A	1	2.82	8.14	3½-3½		2842.076	A	3	3.21	7.55	3½-3½		
2317.377	A	0	2.83	8.16	2½-2½		2811.269	A	3	3.14	7.53	5½-4½		
*2304.736§	A	1	2.79	8.15	4½-4½	b 4F -x 4F°	2847.208	A	4	3.21	7.54	3½-2½	a 4G -z 4D°	
2294.603	A	1	2.82	8.19	3½-3½	(184)	2771.553	A	3	3.22	7.67	2½-1½	(197)	
2293.765	A	1	2.83	8.21	2½-2½		2853.199	A	2	3.22	7.54	2½-2½		
2285.525	A	tr	2.79	8.19	4½-3½		2769.354	A	9	3.14	7.60	5½-6½	a 4G -z 4I°	
2313.962	A	0	2.82	8.15	3½-4½		2793.887	A	7	3.19	7.60	4½-5½		
2301.424	A	0	2.83	8.19	2½-3½		2813.613	A	5	3.21	7.59	3½-4½		
							2764.787	A	3	3.14	7.60	5½-5½		
							2799.712	A	2	3.19	7.59	4½-4½		
							*2770.507	A	5	3.14	7.59	5½-4½		

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air							Air						
2721. 813	A	4	3. 14	7. 67	5½-4½	a 'G - y 'F°	2396. 714	A	3	3. 19	8. 33	4½-5½	a 'G - y 'H°
2757. 029	A	5	3. 19	7. 66	4½-3½	(199)	2379. 155	A	2	3. 21	8. 39	3½-4½	(211)
2763. 913	A	3	3. 21	7. 67	3½-2½		*2134. 592	B	2	3. 14	8. 92	5½-5½	a 'G - x 'H°
2762. 436	A	4	3. 22	7. 68	2½-1½		2140. 612	B	1	3. 14	8. 90	5½-4½	(212)
2750. 003	A	2	3. 19	7. 67	4½-4½		2166. 198	B	20	3. 21	8. 90	3½-4½?	
*2770. 507	A	5	3. 21	7. 66	3½-3½		2116. 960	B	25b	3. 14	8. 97	5½-4½	a 'G - w 'F°
2769. 566	A	1	3. 22	7. 67	2½-2½		2147. 719	B	15	3. 19	8. 93	4½-3½	(213)
2776. 180	A	4	3. 22	7. 66	2½-3½		*2161. 161	B	15b	3. 21	8. 92	3½-2½	
2727. 382	A	8	3. 14	7. 66	5½-4½	a 'G - z 'G°	2167. 880	B	12	3. 22	8. 91	2½-1½	
*2737. 630	A	4	3. 19	7. 69	4½-3½	(200)	2133. 990	B	8b	3. 19	8. 97	4½-4½	
*2750. 896	A	3?	3. 21	7. 69	3½-3½		2155. 839	B	12	3. 21	8. 93	3½-3½	
2769. 153	A	6	3. 21	7. 66	3½-4½		*2164. 558	B	25	3. 22	8. 92	2½-2½	
2756. 504	A	5	3. 22	7. 69	2½-3½								
2711. 842	A	9	3. 14	7. 69	5½-6½	a 'G - z 'I°							
2712. 386	A	6	3. 19	7. 74	4½-5½	(201)	2951. 095	A	2	3. 18	7. 37	1½-1½	b 'P - z 'S°
2684. 940	A	3	3. 14	7. 74	5½-5½							(214)	
2691. 732	A	4	3. 19	7. 77	4½-3½	a 'G - x 'D°	2888. 089	A	5	3. 18	7. 46	1½-2½	b 'P - y 'Pc
2680. 784	A	1	3. 21	7. 81	3½-2½	(202)	2906. 120	A	4	3. 32	7. 57	0½-1½	(215)
2672. 310	A	0	3. 22	7. 83	2½-1½		2812. 493	A	3	3. 18	7. 57	1½-1½	
2704. 569	A	1	3. 21	7. 77	3½-3½		2931. 479	A	1	3. 32	7. 53	0½-0½	
2686. 100	A	1	3. 22	7. 81	2½-2½		2835. 716	A	9	3. 18	7. 54	1½-2½	b 'P - z 'G°
2626. 695	A	1	3. 21	7. 91	3½-3½	a 'G - y 'G°	2831. 562	A	11	3. 18	7. 54	1½-2½	b 'P - z 'D°
2628. 569	A	2	3. 22	7. 91	2½-2½	(203)	2840. 644	A	9	3. 32	7. 67	0½-1½	(217)
2600. 415	A	1	3. 21	7. 95	3½-2½	a 'G - z 'F°	2751. 121	A	6	3. 18	7. 67	1½-1½	
2609. 859	A	4	3. 21	7. 94	3½-3½	(204)	2709. 051	A	7	3. 18	7. 74	1½-2½	b 'P - y 'D°
2605. 416	A	6	3. 22	7. 95	2½-2½		2774. 686	A	7	3. 32	7. 77	0½-1½	(218)
2561. 584	A	1	3. 19	8. 00	4½-4½	a 'G - y 'G°	2852. 864	A	2	3. 32	7. 65	0½-1½	b 'P - y 'P°
2554. 950	A	1	3. 21	8. 04	3½-3½	(205)	2762. 566	A	0	3. 18	7. 65	1½-1½?	(219)
2573. 206	A	4	3. 21	8. 00	3½-4½		2736. 500	A	1	3. 32	7. 83	0½-1½	b 'P - z 'D°
2559. 774	A	5	3. 22	8. 04	2½-3½		2729. 427	A	1h	3. 32	7. 85	0½-0½	(220)
2503. 323	A	7	3. 14	8. 07	5½-5½	a 'G - z 'H°	2646. 692	A	0	3. 18	7. 85	1½-0½	
*2514. 912	A	3	3. 19	8. 09	4½-4½	(206)	2560. 278	A	7	3. 18	8. 00	1½-1½	b 'P - z 'P°
2489. 826	A	8	3. 14	8. 10	5½-5½	a 'G - x 'G°	2639. 560	A	5	3. 32	8. 00	0½-0½	(221)
2506. 091	A	7	3. 19	8. 11	4½-4½	(207)	2562. 094	A	6	3. 18	8. 00	1½-0½	
2502. 388	A	7	3. 21	8. 14	3½-3½		2637. 643	A	6	3. 32	8. 00	0½-1½	
*2497. 817	A	7	3. 21	8. 16	2½-2½		2454. 158	A	2	3. 18	8. 21	1½-2½	b 'P - x 'F°
2482. 654	A	8	3. 14	8. 11	5½-4½		2519. 404	A	2	3. 32	8. 22	0½-1½	(222)
2491. 392	A	6	3. 19	8. 14	4½-3½		2448. 731	A	1	3. 18	8. 22	1½-1½	
*2493. 174	A	12	3. 21	8. 16	3½-2½		2470. 752	A	4	3. 18	8. 18	1½-0½	b 'P - z 'S°
2513. 372	A	1	3. 19	8. 10	4½-5½		2542. 733	A	5	3. 32	8. 18	0½-0½	(223)
2517. 211	A	2	3. 21	8. 11	3½-4½		2425. 677	A	3	3. 18	8. 27	1½-2½	b 'P - y 'D°
2507. 014	A	2	3. 22	8. 14	2½-3½		2478. 115	A	3	3. 32	8. 30	0½-1½	(224)
2463. 280	A	6	3. 14	8. 15	5½-4½	a 'G - x 'F°	2409. 708	A	1	3. 18	8. 30	1½-1½	
2464. 007	A	7	3. 19	8. 19	4½-3½	(208)	2207. 780	B	0	3. 32	8. 91	0½-0½	b 'P - w 'P°
2465. 911	A	7	3. 21	8. 21	3½-2½		2153. 281	B	5	3. 18	8. 91	1½-0½	(225)
2464. 903	A	7	3. 22	8. 22	2½-1½		*2134. 592	B	2	3. 18	8. 96	1½-2½	b 'P - w 'D°
2486. 343	A	7	3. 19	8. 15	4½-4½		2192. 674	B	5	3. 32	8. 95	0½-1½	(226)
2474. 762	A	6	3. 21	8. 19	3½-3½		2197. 273	B	5h	3. 32	8. 94	0½-0½	
2470. 406	A	4	3. 22	8. 21	2½-2½		2108. 942	B	25	3. 18	9. 04	1½-1½	b 'P - y 'P°
2497. 300	A	1	3. 21	8. 15	3½-4½		*2161. 313	B	20b	3. 32	9. 03	0½-0½	(227)
2479. 276	A	0	3. 22	8. 19	2½-3½		*2109. 097	B	10	3. 18	9. 03	1½-0½	
							*2161. 161	B	15b	3. 32	9. 04	0½-1½	
							Vac						
2437. 157	A	3	3. 21	8. 27	3½-2½	a 'G - y 'D°	1994. 857	B	20	3. 18	9. 37	1½-2½?	b 'P - w 'F°
2425. 362	A	2	3. 22	8. 30	2½-1½	(210)							(228)
2441. 548	A	1	3. 22	8. 27	2½-2½								

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2886. 234	A	3	3. 23	7. 51	5½-4½	b ²H -z ⁴G°	2150. 762	B	10	3. 23	8. 97	5½-4½	b ²H -w ⁴F°
2888. 988	A	1	3. 25	7. 53	4½-3½	(229)	2173. 220	B	20b	3. 25	8. 93	4½-3½?	(248)
2916. 933	A	2	3. 25	7. 48	4½-5½		2130. 548	B	12	3. 23	9. 02	5½-4½	b ²H -w ⁴G°
2883. 709	A	10	3. 23	7. 51	5½-6½	b ²H -z ⁴H°	2136. 519	B	20	3. 25	9. 03	4½-3½	(249)
2894. 776	A	7	3. 25	7. 52	4½-5½	(230)	2107. 555	B	10	3. 23	9. 09	5½-5½	b ²H -w ⁴H°
2879. 543	A	2	3. 23	7. 52	5½-5½		*2109. 097	B	10	3. 25	9. 10	4½-4½	(250)
2871. 125	A	6	3. 23	7. 53	5½-4½		2100. 963	B	5h	3. 23	9. 10	5½-4½	
2872. 382	A	9	3. 25	7. 55	4½-3½								
2827. 431	A	5	3. 23	7. 60	5½-6½	b ²H -z ⁴I°							
2837. 300	A	5	3. 25	7. 60	4½-5½	(231)	3021. 407	A	1	3. 37	7. 46	3½-2½	a ²F -y ⁴P°
2822. 668	A	1	3. 23	7. 60	5½-5½		2965. 395	A	2	3. 41	7. 57	2½-1½	(251)
2843. 323	A	4	3. 25	7. 59	4½-4½		2998. 855	A	2	3. 41	7. 53	2½-3½	a ²F -z ⁴G°
2828. 622	A	6	3. 23	7. 59	5½-4½		2971. 616	A	1	3. 37	7. 53	3½-3½	
2791. 001	A	2	3. 25	7. 68	4½-3½	b ²H -y ⁴P°	2991. 244	A	0	3. 41	7. 54	2½-2½	
						(232)	2964. 131	A	7	3. 37	7. 54	3½-2½	
2777. 892	A	5	3. 23	7. 67	5½-4½	b ²H -y ⁴F°	2968. 738	A	2	3. 37	7. 53	3½-4½	a ²F -z ⁴H°
2799. 292	A	7	3. 25	7. 66	4½-3½	(233)	2980. 963	A	4	3. 41	7. 55	2½-3½	
2792. 050	A	1	3. 25	7. 67	4½-4½		2954. 050	A	4	3. 37	7. 55	3½-3½	
2783. 690	A	12	3. 23	7. 66	5½-4½	b ²H -z ⁴G°	2959. 601	A	7	3. 37	7. 54	3½-2½	a ²F -z ⁴D°
2779. 302	A	11	3. 25	7. 69	4½-3½	(234)	2897. 264	A	8	3. 41	7. 67	2½-1½	
2797. 914	A	5	3. 25	7. 66	4½-4½		2986. 617	A	4	3. 41	7. 54	2½-2½	
*2767. 500	A	13	3. 23	7. 69	5½-6½	b ²H -z ²I°	2905. 185	A	1	3. 37	7. 62	3½-3½	a ²F -y ⁴D°
2753. 289	A	12	3. 25	7. 74	4½-5½	(235)	2850. 641	A	0	3. 41	7. 74	2½-2½	(255)
2732. 004	A	4	3. 25	7. 77	4½-3½	b ²H -x ⁴D°	2826. 024	A	4	3. 37	7. 74	3½-2½	
						(236)	2828. 681	A	5	3. 41	7. 77	2½-1½	
2651. 297	A	1	3. 23	7. 89	5½-5½	b ²H -y ⁴G°	2868. 046	A	0	3. 37	7. 68	3½-3½	a ²F -y ⁴P°
2659. 054	A	0	3. 25	7. 89	4½-4½	(237)	2909. 968	A	1	3. 41	7. 65	2½-1½	(256)
2646. 206	A	1	3. 23	7. 89	5½-4½		2869. 156	A	4	3. 37	7. 67	3½-4½	a ²F -y ⁴F°
2652. 557	A	3	3. 25	7. 91	4½-3½		2902. 317	A	3	3. 41	7. 66	2½-3½	
2664. 209	A	2	3. 25	7. 89	4½-5½		2876. 804	A	7	3. 37	7. 66	3½-3½	
*2635. 401	A	2	3. 25	7. 94	4½-3½	b ²H -z ²F°	2895. 071	A	3	3. 41	7. 67	2½-2½	
						(238)	2869. 694	A	2	3. 37	7. 67	3½-2½	
							2887. 312	A	3	3. 41	7. 68	2½-1½	
m2585. 76	P	Fe II	3. 23	8. 00	5½-4½	b ²H -y ⁴G°	2875. 342	A	8	3. 37	7. 66	3½-4½	a ²F -z ⁴G°
*2579. 406	A	3	3. 25	8. 04	4½-3½	(239)	2880. 828	A	8	3. 41	7. 69	2½-3½	(258)
2598. 028	A	2	3. 25	8. 00	4½-4½		2805. 786	A	4	3. 37	7. 77	3½-3½	a ²F -x ⁴D°
2550. 680	A	8	3. 23	8. 07	5½-5½	b ²H -z ²H°	2804. 021	A	3	3. 41	7. 81	2½-2½	
2550. 023	A	8	3. 25	8. 09	4½-4½	(240)	2780. 178	A	tr	3. 37	7. 81	3½-2½	
2536. 673	A	7	3. 23	8. 10	5½-5½	b ²H -x ⁴G°	2830. 061	A	0	3. 41	7. 77	2½-3½	
2529. 221	A	5	3. 23	8. 11	5½-4½	(241)	2728. 898	A	5	3. 37	7. 89	3½-4½	a ²F -y ⁴G°
2525. 858	A	3	3. 25	8. 14	4½-3½		2744. 890	A	3	3. 41	7. 91	2½-3½	
2509. 117	A	4	3. 23	8. 15	5½-4½	b ²H -x ⁴F°	2722. 060	A	5	3. 37	7. 91	3½-3½	
*2497. 709	A	3	3. 25	8. 19	4½-3½	(242)	2741. 395	A	6	3. 41	7. 91	2½-2½	
2520. 669	A	2	3. 25	8. 15	4½-4½		2703. 988	A	10	3. 37	7. 94	3½-3½	a ²F -z ²F°
2484. 243	A	5	3. 23	8. 20	5½-6½	b ²H -y ⁴H°	2716. 216	A	9	3. 41	7. 95	2½-2½	(261)
2492. 341	A	4	3. 25	8. 20	4½-5½	(243)	2693. 852	A	3	3. 37	7. 95	3½-2½	
2481. 044	A	3	3. 23	8. 20	5½-5½		2726. 509	A	3	3. 41	7. 94	2½-3½	
2484. 553	A	1	3. 25	8. 22	4½-4½		2686. 388	A	1	3. 41	8. 00	2½-1½	a ²F -z ²P°
2417. 859	A	6	3. 23	8. 33	5½-5½	b ²H -y ²H°	2664. 665	A	10	3. 37	8. 00	3½-4½	a ²F -y ⁴G°
2400. 338	A	4	3. 25	8. 39	4½-4½	(244)	2666. 631	A	10	3. 41	8. 04	2½-3½	(263)
2389. 870	A	1	3. 23	8. 39	5½-4½		*2645. 084	A	3	3. 37	8. 04	3½-3½	
2311. 224	A	1	3. 25	8. 59	4½-3½	b ²H -y ²F°	2614. 177	A	2	3. 37	8. 09	3½-4½	a ²F -z ²H°
						(245)							
2264. 589	A	1	3. 23	8. 68	5½-4½	b ²H -x ²G°	2604. 655	A	1	3. 37	8. 11	3½-4½	a ²F -x ⁴G°
2263. 224	A	1	3. 25	8. 71	4½-3½	(246)	2609. 431	A	2	3. 41	8. 14	2½-3½	(265)
2168. 925	B	8	3. 23	8. 92	5½-5½	b ²H -x ²H°	2588. 786	A	3	3. 37	8. 14	3½-3½	
2183. 803	B	10h	3. 25	8. 90	4½-4½	(247)	2578. 985	A	1	3. 37	8. 16	3½-2½	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2583. 343	A	0	3. 37	8. 15	3½-4½	a ²F -x ⁴F°	2771. 184	A	5	3. 75	8. 20	4½-5½	b ²G -y ⁴H°
*2579. 406	A	3	3. 41	8. 19	2½-3½		2790. 557	A	3	3. 80	8. 22	3½-4½	(282)
2559. 237	A	3	3. 37	8. 19	3½-3½		2692. 601	A	10	3. 75	8. 33	4½-5½	b ²G -y ⁴H°
*2569. 775	A	4	3. 41	8. 21	2½-2½		2684. 752	A	10	3. 80	8. 39	3½-4½	(283)
2549. 774	A	3	3. 37	8. 21	3½-2½		2657. 917	A	2	3. 75	8. 39	4½-4½	
2563. 834	A	4	3. 41	8. 22	2½-1½								
2545. 432	A	3	3. 37	8. 22	3½-4½	a ²F -y ⁴H°	2549. 082	A	7	3. 75	8. 59	4½-3½	b ²G -y ²F°
2559. 921	A	5	3. 41	8. 23	2½-3½	(267)	2570. 843	A	7	3. 80	8. 60	3½-2½	
2540. 053	A	0	3. 37	8. 23	3½-3½		2573. 754	A	1	3. 80	8. 59	3½-3½	
2519. 044	A	7	3. 37	8. 27	3½-2½	a ²F -y ²D°	2503. 870	A	7	3. 75	8. 68	4½-4½	b ²G -x ²G°
2521. 089	A	7	3. 41	8. 30	2½-1½	(268)	2514. 383	A	7	3. 80	8. 71	3½-3½	
2538. 577	A	2	3. 41	8. 27	2½-2½		2387. 424	A	2	3. 75	8. 92	4½-5½	b ²G -x ⁴H°
2457. 104	A	0	3. 37	8. 39	3½-4½	a ²F -y ²H°	2416. 705	A	1	3. 80	8. 90	3½-4½	(286)
						(269)	2345. 177	A	0	3. 75	9. 01	4½-3½	b ²G -x ²F°
							2366. 040	A	0h	3. 80	9. 01	3½-3½	(287)
2363. 811	A	3	3. 37	8. 59	3½-3½	a ²F -y ²F°	2313. 300	A	1	3. 75	9. 09	4½-5½	b ²G -w ²H°
*2378. 526	A	2	3. 41	8. 60	2½-2½	(270)	2325. 577	A	1	3. 80	9. 10	3½-4½	(288)
2361. 371	A	On	3. 37	8. 60	3½-2½								
2187. 444	B	12	3. 37	9. 01	3½-3½	a ²F -x ²F°	*2211. 112	B	5	3. 75	9. 33	4½-3½	b ²G -w ²F°
2185. 622	B	8h	3. 37	9. 02	3½-2½?	(271)							
2132. 537	B	2	3. 41	9. 20	2½-1½?	a ²F -x ²D°	2093. 683	B	35	3. 75	9. 65	4½-3½	b ²G -v ²F°
						(272)	2127. 967	B	10	3. 80	9. 60	3½-2½	(290)
							2110. 240	B	25	3. 80	9. 65	3½-3½	
2070. 330	B	8	3. 37	9. 33	3½-3½	a ²F -w ²F°							
2069. 952	B	10b	3. 41	9. 37	2½-2½	(273)	2989. 367	A	tr	3. 87	8. 00	1½-0½	b ⁴D -z ²P°
2083. 512	B	0b	3. 41	9. 33	2½-3½		2986. 91	A		3. 87	8. 00	1½-1½	
Vac							2989. 731	A	0	3. 87	8. 00	0½-0½	
1642. 187	B	5	3. 37	10. 89	3½-3½	a ²F -1°	2997. 749	A	tr d	3. 89	8. 00	3½-4½	b ⁴D -y ³G°
1233. 660	B	8	3. 37	13. 68	3½-3½	a ²F -26°	2922. 023	A	5	3. 89	8. 11	3½-4½	b ⁴D -x ⁴G°
						(275)	2894. 058	A	2	3. 87	8. 14	2½-3½	(293)
							2879. 849	A	0	3. 87	8. 16	1½-2½	
							2902. 056	A	1	3. 89	8. 14	3½-3½	
							2881. 801	A	0	3. 87	8. 16	2½-2½	
Air													
3012. 59	P		3. 80	7. 89	3½-4½	b ²G -y ⁴G°	2895. 215	A	7	3. 89	8. 15	3½-4½	b ⁴D -x ⁴F°
2978. 850	A	2	3. 75	7. 89	4½-4½	(276)	2857. 171	A	7	3. 87	8. 19	2½-3½	(294)
3004. 249	A	2	3. 80	7. 91	3½-3½		2843. 485	A	5	3. 87	8. 21	1½-2½	
2970. 682	A	5	3. 75	7. 91	4½-3½		2836. 509	A	4	3. 87	8. 22	0½-1½	
3000. 059	A	5	3. 80	7. 91	3½-2½		2864. 968	A	4	3. 89	8. 19	3½-3½	
							2845. 392	A	4	3. 87	8. 21	2½-2½	
							2836. 185	A	4	3. 87	8. 22	1½-1½	
2949. 178	A	10	3. 75	7. 94	4½-3½	b ²G -z ²F°	2853. 119	A	1	3. 89	8. 21	3½-2½	
2969. 934	A	8	3. 80	7. 95	3½-2½	(277)	2785. 800	A	tr	3. 87	8. 30	2½-1½	b ⁴D -y ³D°
2982. 239	A	3	3. 80	7. 94	3½-3½		*2807. 165	A	1	3. 87	8. 27	2½-2½	(295)
2902. 459	A	5	3. 75	8. 00	4½-4½	b ²G -y ²G°	2783. 959	A	2	3. 87	8. 30	1½-1½	
2910. 761	A	3	3. 80	8. 04	3½-3½	(278)	2805. 315	A	3	3. 87	8. 27	1½-2½	
2879. 241	A	4	3. 75	8. 04	4½-3½		2784. 282	A	2	3. 87	8. 30	0½-1½	
2934. 488	A	3	3. 80	8. 00	3½-4½								
*2858. 340	A	11	3. 75	8. 07	4½-5½	b ²G -z ²H°	2635. 127	A	tr	3. 87	8. 56	1½-1½	b ⁴D -x ⁴P°
2873. 399	A	10	3. 80	8. 09	3½-4½	(279)	*2635. 401	A	2	3. 87	8. 56	0½-1½	(296)
2842. 677	A	1	3. 75	8. 09	4½-4½		2615. 729	A	0	3. 87	8. 59	2½-3½	b ⁴D -y ³F°
2840. 756	A	8	3. 75	8. 10	4½-5½	b ²G -x ⁴G°	2554. 435	A	0	3. 87	8. 71	2½-3½	b ⁴D -x ³G°
2861. 903	A	1	3. 80	8. 11	3½-4½	(280)							
2812. 667	A	0	3. 75	8. 14	4½-3½								
2830. 939	A	1	3. 80	8. 16	3½-2½		2469. 512	A	6	3. 89	8. 88	3½-2½	b ⁴D -w ⁴P°
*2807. 165	A	1	3. 80	8. 19	3½-3½	b ²G -x ⁴F°	2458. 964	A	5	3. 87	8. 89	2½-1½	(298)
2777. 840	A	1	3. 75	8. 19	4½-3½	(281)	2447. 320	A	3	3. 87	8. 91	1½-0½	
2795. 760	A	1	3. 80	8. 21	3½-2½		2447. 560	A	1h	3. 87	8. 91	0½-0½	
							2457. 785	A	0	3. 87	8. 89	0½-1½	

Fe II—Continued

Fe II—Continued

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)	
			Low	High						Low	High			
Air							Air							
2428.367	A	6	3.89	8.97	3½-4½	b ⁴ D -w ⁴ F° (300)	2885.929	A	5	4.06	8.33	6½-5½	a ² I -y ² H° (317)	
2440.416	A	4	3.87	8.93	2½-3½		2848.899	A	5	4.06	8.39	5½-4½		
2445.787	A	4	3.87	8.92	1½-2½		2888.736	A	0d	4.06	8.33	5½-5½		
2450.196	A	4	3.87	8.91	0½-1½									
2446.103	A	4	3.89	8.93	3½-3½		2592.781	A	9	4.06	8.82	6½-7½	a ² I -z ² K° (318)	
2447.203	A	3	3.87	8.92	2½-2½		2625.489	A	9	4.06	8.76	5½-6½		
2449.961	A	4	3.87	8.91	1½-1½		2623.129	A	4	4.06	8.76	6½-6½		
2452.916	A	1	3.89	8.92	3½-2½									
*2451.354	A	1	3.87	8.91	2½-1½		2538.205	A	6	4.06	8.92	6½-5½	a ² I -x ² H° (319)	
							2548.925	A	5	4.06	8.90	5½-4½		
2428.286	A	4	3.89	8.97	3½-3½	b ⁴ D -w ⁴ D° (301)	2454.574	A	6	4.06	9.09	6½-5½	a ² I -w ² H° (320)	
*2424.585	A	3	3.87	8.96	2½-2½		2447.753	A	6	4.06	9.10	5½-4½		
2428.795	A	3	3.87	8.95	1½-1½		2456.641	A	2	4.06	9.09	5½-5½		
2434.645	A	3	3.87	8.94	0½-0½									
*2430.184	A	2	{ 3.89	8.96	3½-2½		2432.867	A	7	4.06	9.13	6½-6½	a ² I -y ² I° (321)	
2434.398	A	0	3.87	8.94	1½-0½		2434.733	A	7	4.06	9.13	5½-5½		
2422.688	A	4	3.87	8.97	2½-3½		2432.701	A	1	4.06	9.13	6½-5½		
2423.204	A	4	3.87	8.96	1½-2½									
2429.034	A	3	3.87	8.95	0½-1½									
2406.982	A	3	3.89	9.01	3½-3½	b ⁴ D -x ² F° (302)	2984.273	A	tr	4.14	8.27	3½-2½	c ² G -y ² D° (322)	
2394.172	A	0	3.87	9.03	2½-3½	b ⁴ D -w ² G° (303)	2936.022	A	2	4.13	8.33	4½-5½	c ² G -y ² H° (323)	
2399.636	A	0	3.89	9.03	3½-3½		2897.744	A	2	4.14	8.39	3½-4½		
2390.311	A	0	3.87	9.03	1½-0½	b ⁴ D -y ² P° (304)	2766.200	A	1	4.13	8.59	4½-3½	c ² G -y ² F° (324)	
2390.546	A	0	3.87	9.03	0½-0½		2765.493	A	1	4.14	8.60	3½-2½		
2211.243	B	12	3.87	9.45	0½-0½	b ⁴ D -x ² P° (305)	2768.848	A	0h?	4.14	8.59	3½-3½		
							2712.989	A	1	4.13	8.68	4½-4½?	c ² G -x ² G° (325)	
							2697.726	A	2	4.13	8.71	4½-3½		
							2715.609	A	0	4.14	8.68	3½-4½		
*2979.096	A	3	3.95	8.09	3½-4½	b ² F -z ² H° (306)	2576.859	A	7	4.13	8.92	4½-5½	c ² G -x ² H° (326)	
							2587.945	A	7	4.14	8.90	3½-4½		
							2585.629	A	5	4.13	8.90	4½-4½		
2946.173	A	0	3.95	8.14	3½-3½	b ² F -x ⁴ G° (307)	2580.717	A	0	4.14	8.92	3½-2½	c ² G -w ⁴ F° (327)	
2933.466	A	0	3.95	8.16	3½-2½									
2892.215	A	0 Fe I?	3.93	8.19	2½-3½	b ² F -x ⁴ F° (308)	2551.201	A	4	4.13	8.97	4½-3½	c ² G -w ⁴ D° (328)	
2880.136	A	0	3.93	8.21	2½-2½									
2658.251	A	4	3.95	8.59	3½-3½	b ² F -y ² F° (309)	2527.694	A	5	4.13	9.01	4½-3½	c ² G -x ² F° (329)	
2642.015	A	4	3.93	8.60	2½-2½		2529.929	A	1	4.14	9.01	3½-3½		
*2645.084	A	3	3.93	8.59	2½-3½			2521.810	A	7	4.14	9.03	3½-3½	c ² G -w ² G° (330)
								2525.114	A	4	4.14	9.02	3½-4½	
2609.122	A	5	3.95	8.68	3½-4½	b ² F -z ² G° (310)	2490.728	A	4	4.13	9.09	4½-5½	c ² G -w ² H° (331)	
2582.422	A	3	3.93	8.71	2½-3½		2483.721	A	3	4.14	9.10	3½-4½		
2594.964	A	2	3.95	8.71	3½-3½		*2481.576	A	2	4.13	9.10	4½-4½		
2477.117	A	tr	3.93	8.91	2½-1½	b ² F -w ⁴ F° (311)	2468.194	A	1	4.13	9.13	4½-5½	c ² G -y ² I° (332)	
								2372.631	A	3	4.13	9.33	4½-3½	c ² G -w ² F° (333)
*2459.097	A	2	3.95	8.97	3½-3½?	b ² F -w ⁴ D° (312)	*2357.005	A	3n	4.14	9.37	3½-2½		
								2237.894	A	0	4.13	9.65	4½-3½	c ² G -v ² F° (334)
2437.256	A	3	3.95	9.01	3½-3½	b ² F -x ² F° (313)	2239.638	A	tr	4.14	9.65	3½-3½		
2423.919	A	1	3.93	9.02	2½-2½									
*2346.271	A	1	3.95	9.21	3½-2½	b ² F -x ² D° (314)	2997.298	A	7	4.48	8.59	2½-3½	b ² D -y ² F° (335)	
2341.953	A	1	3.93	9.20	2½-1½		2982.059	A	8	4.46	8.60	1½-2½		
							2993.366	A	1h	4.48	8.60	2½-2½		
2292.770	A	0	3.95	9.33	3½-3½	b ² F -w ² F° (315)	2917.087	A	4	4.48	8.71	2½-3½	b ² D -x ² G° (336)	
2266.699	A	0	3.93	9.37	2½-2½									
2276.378	A	tr	3.95	9.37	3½-2½		2783.410	A	1h	4.46	8.89	1½-1½	b ² D -w ⁴ P° (337)	
Vac							2793.239	A	2	4.48	8.89	2½-1½		
1602.588	B	12	3.93	11.63	2½-2½	b ² F -14° (316)	2770.303	A	1	4.46	8.91	1½-0½		

Fe II—Continued

Fe II—Continued

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2768.334 2773.678	A A	1 1h	4.46 4.46	8.92 8.91	1½-2½ 1½-1½	b ² D - w ⁴ F° (338)	Air 2433.571 2460.644	A A	1 2	4.71 4.72	9.78 9.73	2½-1½ 1½-0½	c ² D - w ² P° (359)
2719.296 2707.128 *2716.429§	A A A	5 6 3	4.48 4.46 4.48	9.01 9.02 9.02	2½-3½ 1½-2½ 2½-2½	b ² D - x ² F° (339)	2436.413	A	0	4.72	9.78	1½-1½	c ² D - x ² P° (360)
2709.937	A	0	4.48	9.03	2½-3½?	b ² D - w ² G° (340)	2022.776	B	1	4.72	10.82	1½-0½	c ² D - y ² F° (361)
*2706.566§ 2697.453 2697.330	A A A	7 5 4	4.48 4.46 4.46	9.04 9.03 9.04	2½-1½ 1½-0½ 1½-1½	b ² D - y ² P° (341)	Vac 1900.667	B	0	4.72	11.21	1½	c ² D - 8° (362)
2606.514 2605.307 2597.943	A A A	7 6 2	4.48 4.46 4.46	9.21 9.20 9.21	2½-2½ 1½-1½ 1½-2½	b ² D - x ² D° (342)	Air 2537.142 2525.933 2520.267	A A A	5 2 1h	4.75 4.77 4.80	9.61 9.66 9.69	4½-4½ 3½-3½ 2½-2½	z ⁶ D° - e ⁶ D (363)
*2540.669 2512.513 2520.535	A A A	6 5 0	4.48 4.46 4.48	9.33 9.37 9.37	2½-3½ 1½-2½ 2½-2½	b ² D - w ² F° (343)	2515.925 2513.155 2507.695	A A A	0 2h 2h	4.83 4.75 4.77	9.73 9.66 9.69	0½-0½ 4½-3½ 3½-2½	
2340.352	A	1	4.46	9.73	1½-0½	b ² D - w ² P° (344)	2507.607 2509.875 2550.155 2538.681	A A A A	2h 1h 2 2	4.80 4.82 4.77 4.80	9.72 9.73 9.61 9.66	2½-1½ 1½-0½ 3½-4½ 2½-3½	
Vac 1875.536	B	15	4.46	11.04	1½-2½	b ² D - 3° (345)	*2530.103 2523.451	A A	6 1h	4.82 4.83	9.69 9.72	1½-2½ 0½-1½	
1725.402	B	5	4.48	11.63	2½-2½	b ² D - 14° (346)	2419.485 2418.702	A A	0 1	4.80 4.82	9.90 9.92	2½-1½ 1½-0½	z ⁶ D° - e ⁶ D (364)
Air 2832.270	A	0	4.60	8.95	0½-1½	a ² S - w ⁴ D° (347)	2251.831 2255.691 2257.788	B A A	80 50 25	4.75 4.77 4.80	10.23 10.24 10.26	4½-5½ 3½-4½ 2½-3½	z ⁶ D° - e ⁶ F (365)
2779.906 2780.035	A A	4 3	4.60 4.60	9.04 9.03	0½-1½ 0½-0½	a ² S - y ² P° (348)	2256.897 2254.066 2245.505	A B A	10 8 45	4.82 4.83 4.75	10.28 10.30 10.24	1½-2½ 0½-1½ 4½-4½	
*2569.775 2540.531	A A	4 2	4.60 4.60	9.40 9.45	0½-1½ 0½-0½	a ² S - x ² P° (349)	2247.692 *2249.063 2249.181	A A A	35 30 25	4.77 4.80 4.82	10.26 10.28 10.30	3½-3½ 2½-2½ 1½-1½	
Vac 1397.581	B	12	4.60	13.69	0½-1½	a ² S - 27° (350)	*2249.063 2237.577 2239.047 2241.426 2244.216	A A A A A	30 20 25 20 8	4.83 4.75 4.77 4.80 4.82	10.32 10.26 10.28 10.30 10.32	0½-0½ 4½-3½ 3½-2½ 2½-1½ 1½-0½	
							2209.049 2228.761	B B	20 30	4.75 4.80	10.33 10.33	4½-3½ 2½-3½	z ⁶ D° - 30 (366)
Air 2924.160	A	1	4.71	8.93	2½-3½	c ² D - w ⁴ F° (351)	2208.419 2191.935 2198.660	B B B	30 10 4	4.75 4.77 4.80	10.34 10.40 10.41	4½-3½ 3½-2½ 2½-1½	z ⁶ D° - e ⁶ P (367)
2898.738	A	1	4.71	8.97	2½-3½	c ² D - w ⁴ D° (352)	2218.289 2201.595 2206.153	B B B	30 5 8	4.77 4.80 4.82	10.34 10.40 10.41	3½-3½ 2½-2½ 1½-1½	
*2868.446§	A	4	4.71	9.01	2½-3½	c ² D - x ² F° (353)	2214.059 2223.866 2231.512	B B B	20 2 10	4.77 4.80 4.82	10.35 10.35 10.35	3½-2½ 2½-2½ 1½-2½	z ⁶ D° - 32 (368)
2858.519	A	3	4.72	9.03	1½-0½	c ² D - y ² P° (354)	2215.094 2222.679 2227.469	B B B	10 1 4	4.80 4.82 4.83	10.37 10.37 10.37	2½-1½ 1½-1½ 0½-1½	z ⁶ D° - 33 (369)
2670.384 *2651.691§ 2648.159	A A A	2 3? tr	4.71 4.72 4.71	9.33 9.37 9.37	2½-3½ 1½-2½ 2½-2½	c ² D - w ² F° (355)	2180.870 2180.255 2181.137	B B B	12 12 8	4.75 4.80 4.82	10.41 10.46 10.47	4½-5½ 2½-3½ 1½-2½	z ⁶ D° - e ⁶ G (370)
2633.200 2605.895 2636.687	A	5 3 1	4.71 4.72 4.72	9.40 9.45 9.40	2½-1½ 1½-0½ 1½-1½	c ² D - x ² P° (356)	2181.407 2169.950 2176.826	B B B	5b 12 20	4.83 4.75 4.82	10.49 10.43 10.49	0½-1½ 4½-4½ 1½-1½	
2500.919 2529.078	A	5 5	4.71 4.72	9.65 9.60	2½-3½ 1½-2½	c ² D - v ² F° (357)	*2161.313 *2164.558 2169.431	B B B	20b 25 10	4.75 4.77 4.80	10.46 10.47 10.49	4½-3½ 3½-2½ 2½-1½?	
2482.320 2470.225 2469.823	A	3 1 2	4.72 4.71 4.72	9.69 9.69 9.71	1½-1½ 2½-1½ 1½-2½	c ² D - w ² D° (358)	2215.728 2220.453	B B	4 6	4.82 4.83	10.39 10.39	1½- 0½-	z ⁶ D° - 34 (371)

Fe II—Continued

Fe II—Continued

Fe II—Continued

Fe II—Continued

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2991.817	A	2h	5.49	9.61	3½-4½	$\pi^+ D^o - e^- D$	2403.967	A	tr	5.93	11.06	2½-1½?	$d^2 D^- - 4^o$
2958.528	A	1h	5.49	9.66	3½-3½	(398)	2332.503	A	tr	5.93	11.22	2½-1½?	$d^2 D^- - 9^o$
2962.936	A	1h	5.53	9.69	2½-2½		2303.840	A	0	5.88	11.24	1½-2½	$d^2 D^- - 11^o$
2968.119	A	0	5.56	9.72	1½-1½		2722.740	A	4	6.20	10.73	2½-3½	$c^4 P^- - v^4 D^o$
2972.016	A	0	5.58	9.73	0½-0½		2682.989	A	3	6.11	10.71	1½-2½	
2856.928	A	8h	5.49	9.81	3½-3½	$\pi^+ D^o - e^- D$	2669.932	A	2	6.06	10.68	0½-1½	
2848.122	A	7h	5.53	9.86	2½-2½	(399)	2734.803	A	2	6.20	10.71	2½-2½	
2845.450	A	4	5.56	9.90	1½-1½		2699.185	A	2	6.11	10.68	1½-1½	
2844.973	A	3h	5.58	9.92	0½-0½		*2681.038	A	2	6.06	10.66	0½-0½	
2824.589	A	1h	5.53	9.90	2½-1½		2718.639	A	5	6.19	10.73	4½-3½	$c^4 F^- - v^4 D^o$
2831.883	A	1v	5.56	9.92	1½-0½		2732.936	A	3	6.20	10.71	3½-2½	
2884.779	A	4h	5.53	9.81	2½-3½		2753.034	A	2	6.18	10.66	1½-0½	
2858.639	A	3h	5.58	9.90	0½-1½		2729.569	A	1	6.19	10.71	2½-2½	
2484.442	A	3h	5.49	10.45	3½-3½	$\pi^+ D^o - f^- D$	2741.325	A	0	6.18	10.68	1½-1½	
2493.880	A	2	5.53	10.48	2½-2½	(400)	*2717.533	A	1	6.19	10.73	2½-3½	
2501.351	A	0	5.58	10.51	0½-0½		2752.092	A	3h	6.19	10.68	4½-3½	$c^4 F^- - u^2 F^o$
2473.037	A	1	5.49	10.48	3½-2½		2741.045	A	2	6.18	10.68	1½-2½	
2482.869	A	1	5.53	10.50	2½-1½		2565.306	A	0	6.19	11.00	4½-3½	$c^4 F^- - 2^o$
2510.121	A	1h	5.56	10.48	1½-2½		2567.326	A	0	6.20	11.00	3½-3½	
2453.973	A	2h	5.49	10.52	3½-4½	$\pi^+ D^o - e^- G$	Vac						
2460.171	A	1h	5.56	10.58	1½-2½	(401)	1732.253	B	15	6.19	13.68	4½-3½	$c^4 F^- - 20^o$
2398.664	A	2h	5.49	10.63	3½-4½	$\pi^+ D^o - e^- F$							
2401.301	A	2h	5.53	10.67	2½-3½	(402)							
2405.688	A	2h	5.56	10.69	1½-2½								
2408.653	A	2h	5.58	10.70	0½-1½								
2390.766	A	1h	5.53	10.69	2½-2½								
*2959.841	A	4	5.54	9.71	3½-2½	$c^2 F^- - w^2 D^o$							
*2979.096	A	3	5.55	9.69	2½-1½	(403)							
2961.119	A	tr	5.55	9.71	2½-2½								
2566.218	A	5	5.54	10.35	3½-4½	$c^2 F^- - v^2 G^o$							
2605.034	A	6	5.55	10.28	2½-3½	(404)							
2604.048	A	1	5.54	10.28	3½-3½								
2566.397	A	4	5.54	10.35	3½-2½	$c^2 F^- - v^2 D^o$	Air						
2535.364	A	3	5.55	10.41	2½-1½	(405)	2645.191	A	2	6.78	11.44	1½-2½	$c^3 P^- - u^3 D^o$
2203.420	B	1	5.55	11.15	2½-3½	$c^2 F^- - 5^o$							
						(406)							
							2998.662	A	tr	6.77	10.89	2½-3½?	$d^2 F^- - 1^o$
2763.979	A	2	5.80	10.26	2½-3½?	$\pi^+ P^o - e^- F$	2824.401	A	tr	6.78	11.15	3½-3½	$d^2 F^- - 5^o$
2680.244	A	1h	5.80	10.40	2½-2½	$\pi^+ P^o - e^- P$	2764.465	A	0	6.78	11.24	3½-2½	$d^2 F^- - 11^o$
2648.704	A	0	5.80	10.46	2½-3½	$\pi^+ P^o - e^- G$	2682.510	A	3	7.78	11.38	3½-4½	$d^2 F^- - v^4 F^o$
2650.492	A	4h	5.80	10.45	2½-3½	$\pi^+ P^o - f^- D$	2645.328	A	3	6.78	11.44	3½-2½	
2667.221	A	3h	5.85	10.48	1½-2½	(410)	2676.881	A	2	6.77	11.38	2½-1½	$d^2 F^- - u^2 D^o$
2671.404	A	2h	5.88	10.50	0½-1½		2642.982	A	0	6.77	11.44	2½-2½	
2637.515	A	2h	5.80	10.48	2½-2½								
2654.639	A	2h	5.85	10.50	1½-1½								
2662.563	A	2h	5.88	10.51	0½-0½								
2625.202	A	0	5.80	10.50	2½-1½		2664.259	A	3	6.78	11.41	3½-4½	$d^2 F^- - u^2 G^o$
2645.911	A	0h	5.85	10.51	1½-0½		2649.467	A	4	6.77	11.43	2½-3½	
							2651.826	A	0	6.78	11.43	3½-3½	
2790.177	A	0	5.93	10.35	2½-2½	$d^2 D^- - v^2 D^o$	2665.563	A	1h	7.48	12.11	5½-6½	$z^4 G^o - e^- 4H$
2570.527	A	5	5.93	10.73	2½-3½	$d^2 D^- - v^4 D^o$	2663.961	A	0h	7.54	12.17	2½-3½	

Fe II—Continued

Fe II—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	E P		J	Multiplet (No.)	
			Low	High					Low	High			
Air							Air						
2680. 723	A	2	7. 51	12. 11	6½-6½	<i>z</i> $^4\text{H}^\circ - e$ ^4H (429)	2918. 541	A	2h	7. 89	12. 11	5½-6½	<i>y</i> $^4\text{G}^\circ - e$ ^4H (435)
2672. 506	A	2h	7. 52	12. 13	5½-5½		2910. 724	A	2h	7. 89	12. 13	4½-5½	
2669. 023	A	1h	7. 53	12. 15	4½-4½		2905. 770	A	2h	7. 91	12. 15	3½-4½	
2672. 152	A	1h	7. 55	12. 17	3½-3½		2899. 284	A	1h	7. 91	12. 17	2½-3½	
2668. 938	A	1h	7. 51	12. 13	6½-5½		2904. 574	A	0h	7. 89	12. 13	5½-5½	
2661. 789	A	0h	7. 52	12. 15	5½-4½		2897. 983	A	1	7. 89	12. 15	4½-4½	
2660. 256	A	0h	7. 53	12. 17	4½-3½		2895. 331	A	0h	7. 91	12. 17	3½-3½	
2684. 354	A	tr	7. 52	12. 11	5½-6½		2800. 548	A	2h	7. 89	12. 29	5½-4½	<i>y</i> $^4\text{G}^\circ - f$ ^4F (436)
2679. 799	A	0	7. 53	12. 13	4½-5½		2797. 215	A	2h	7. 89	12. 31	4½-3½	
*2681. 038	A	2	7. 55	12. 15	3½-4½		2790. 065	A	1	7. 91	12. 33	2½-1½	
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2667. 635	A	tr	7. 54	12. 17	2½-3½	<i>z</i> $^3\text{D}^\circ - e$ ^4H (430)	2987. 542	A	1h	8. 00	12. 13	4½-5½	<i>y</i> $^3\text{G}^\circ - e$ ^4H (437)
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2717. 888	A	3h	7. 57	12. 11	7½-6½	<i>z</i> $^4\text{I}^\circ - e$ ^4H (431)	2803. 450	A	2h	8. 00	12. 41	4½-3½	<i>y</i> $^3\text{G}^\circ - e$ ^2F (438)
2712. 317	A	1h	7. 60	12. 15	5½-4½		2805. 007	A	2h	8. 04	12. 44	3½-2½	
2697. 801	A	2h	7. 59	12. 17	4½-3½		-----	-----	-----	-----	-----	-----	
2731. 247	A	1h	7. 60	12. 11	6½-6½		-----	-----	-----	-----	-----	-----	
2723. 438	A	0	7. 60	12. 13	5½-5½		-----	-----	-----	-----	-----	-----	
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2671. 941	A	1h	7. 67	12. 29	4½-4½	<i>y</i> $^4\text{F}^\circ - f$ ^4F (432)	2963. 897	A	3h	8. 07	12. 23	5½-5½	<i>z</i> $^3\text{H}^\circ - e$ ^2H (439)
2657. 181	A	0h	7. 66	12. 31	3½-3½		*2959. 841	A	4	8. 09	12. 26	4½-4½	
2653. 678	A	0h	7. 67	12. 32	2½-2½		-----	-----	-----	-----	-----	-----	
2653. 586	A	0h	7. 68	12. 33	1½-1½		-----	-----	-----	-----	-----	-----	
2665. 337	A	0h	7. 66	12. 29	3½-4½		2763. 674	A	2h	8. 20	12. 66	6½-5½	<i>y</i> $^4\text{H}^\circ - f$ ^4G (440)
2663. 269	A	0	7. 67	12. 31	2½-3½		-----	-----	-----	-----	-----	-----	
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2760. 757	A	tr	7. 66	12. 13	4½-5½	<i>z</i> $^3\text{G}^\circ - e$ ^4H (433)	2940. 136	A	2h	8. 59	12. 79	3½-4½	<i>y</i> $^3\text{F}^\circ - e$ ^2G (441)
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2716. 572	A	3h	7. 69	12. 23	6½-5½	<i>z</i> $^3\text{I}^\circ - e$ ^2H (434)	2882. 523	A	2h	9. 13	13. 41	6½-6½	<i>y</i> $^3\text{I}^\circ - e$ ^3I (442)
*2726. 254§	A	3h	7. 74	12. 26	5½-4½		2884. 282	A	2h	9. 13	13. 41	5½-5½	
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Strongest Unclassified Lines of Fe II of Wavelength Longer Than 2000 Å

Air							Air					
2968. 906	A	2					2579. 127	A	3h			
2931. 593	A	4					2521. 485	A	2			
2770. 432	A	2					2521. 209	A	2			
2761. 635	A	2					2515. 105	A	3			
2761. 128	A	2					2508. 338	A	2h			
2757. 818	A	2					2495. 860	A	5			
2754. 155	A	2					2488. 335	A	2			
2732. 328	A	2					2450. 027	A	3			
2731. 841	A	2					2429. 849	A	2			
2728. 567	A	2h					2387. 380	A	2			
2607. 529	A	3h					2365. 771	A	2h			

Fe III

I P 30.48 Anal A List C June 1950

REFERENCES

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C. E. Moore, *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. II, 60 (1952). Changes in notation.

* and 55 = Blend Fe III and Fe III, also blend Fe III and Fe II

* and ξ = Blend Fe III and Fe II

* and ** = Blend Fe III and Fe I

Fe III

Fe III

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Vac							Vac						
1122. 526	A	9	0.00	11.00	4-3	$a^4D - z^4P^o$	997. 081	A	7	2.40	14.78	2-2	$a^3P - z^3P^o \dagger$
1124. 883	A	9	0.05	11.03	3-2	(1)	1007. 113	A	3	2.55	14.81	1-1	
1126. 72	A	6	0.09	11.05	2-1		994. 257	A	3	2.40	14.81	2-1	
1128. 02	A	8	0.05	11.00	3-3		1010. 005	A	4	2.55	14.78	1-2	
1128. 72	A	7	0.09	11.03	2-2								
1129. 19	A	7	0.12	11.05	1-1		934. 703	A	7	2.40	15.60	2-1	$a^3P - z^3S^o$
1131. 914	A	3	0.09	11.00	2-3		946. 056	A	6	2.55	15.60	1-1	(10)
1131. 194	A	7	0.12	11.03	1-2		950. 722	A	3	2.62	15.60	0-1	
1130. 404	A	5	0.13	11.05	0-1								
859. 721	A	8	0.00	14.36	4-5	$a^4D - z^4F^o \dagger$	859. 838	A	6	2.40	16.75	2-3	$a^3P - w^3D^o \dagger$
861. 832	A	10	0.05	14.38	3-4	(2)	861. 284	A	4	2.55	16.89	1-2	
*859. 626	A	6	0.09	14.45	2-3		*867. 639	A	5	2.62	16.85	0-1	
*861. 761	A	8	0.12	14.44	1-2								
862. 735	A	5	0.13	14.44	0-1								
858. 602	A	3	0.00	14.38	4-4		1017. 254	A	9	2.48	14.61	6-6	$a^3H - z^3H^o$
857. 392	A	5	0.05	14.45	3-3		1017. 745	A	8	2.51	14.64	5-5	
860. 315	A	5	0.09	14.44	2-2		1018. 286	A	8	2.53	14.65	4-4	
862. 028	A	5	0.12	14.44	1-1								
*861. 761	A	8	0.05	14.38	3-3	$a^4D - z^4D^o \dagger$	981. 373	A	10	2.48	15.05	6-5	$a^3H - z^3G^o$
*864. 425	A	4	0.09	14.37	2-2	(3)	*983. 877	A	10b	2.51	15.05	5-4	
858. 565	A	4	0.00	14.38	4-3		985. 824	A	8	2.53	15.05	4-3	
862. 191	A	2	0.05	14.37	3-2								
854. 073	A	5	0.05	14.51	3-4		901. 034	A	5	2.48	16.18	6-7	$a^3H - z^3K^o$
864. 034	A	6	0.09	14.38	2-3		905. 338	A	7	2.51	16.14	5-6	
865. 896	A	4	0.12	14.37	1-2								
844. 284	A	10	0.00	14.62	4-3	$a^4D - y^4P^o \dagger$	891. 172	A	10	2.48	16.33	6-6	$a^3H - y^3H^o \dagger$
845. 408	A	9	0.05	14.66	3-2	(4)	890. 755	A	9	2.51	16.37	5-5	
*846. 534	A	6	0.09	14.67	2-1		891. 442	A	8	2.53	16.38	4-4	
*847. 425	A	8b	0.05	14.62	3-3		845. 925	A	7	2.48	17.07	6-6	$a^3H - x^3H^o \dagger$
847. 578	A	7	0.09	14.66	2-2		851. 332	A	7	2.51	17.01	5-5	
847. 924	A	6	0.12	14.67	1-1		854. 367	A	6*	2.53	16.98	4-4	
823. 257	A	6	0.00	15.00	4-5	$a^4D - y^4F^o \dagger$	837. 439	A	7	2.48	17.22	6-5	$a^3H - w^3G^o \dagger$
827. 777	A	6	0.05	14.97	3-4	(5)	*838. 048	A	8	2.51	17.24	5-4	
831. 464	A	5	0.09	14.94	2-3		838. 936	A	5	2.53	17.24	4-3	
834. 067	A	4	0.12	14.92	1-2								
813. 382	A	10	0.00	15.18	4-4	$a^4D - y^4D^o \dagger$	832. 328	A	5	2.48	17.31	6-7	$a^3H - y^3I^o \dagger$
817. 038	A	7	0.05	15.16	3-3	(6)	*836. 521	A	7	2.51	17.26	5-6	
818. 598	A	4	0.09	15.17	2-2		840. 141	A	4	2.53	17.22	4-5	
*816. 163	A	6	0.12	15.24	1-0		807. 547	A	9	2.48	17.76	6-5	$a^3H - v^3G^o$
816. 273	A	6	0.05	15.18	3-4		807. 855	A	8	2.51	17.79	5-4	
808. 079	A	5	0.00	15.28	4-3	$a^4D - x^4P^o \dagger$	808. 840	A	8	2.53	17.79	4-3	
811. 284	A	8	0.05	15.27	3-2	(7)							
814. 242	A	6	0.09	15.25	2-1								
810. 940	A	7	0.05	15.28	3-3		1032. 123	A	8	2.65	14.61	4-4	$a^3F - z^3F^o \dagger$
813. 288	A	4	0.09	15.27	2-2		1035. 768	A	6	2.68	14.60	3-3	
728. 810	A	6	0.00	16.94	4-4	$a^4D - x^4D^o \dagger$	1038. 355	A	6	2.70	14.59	2-2	
729. 996	A	5	0.05	16.96	3-3								
730. 96	A	2	0.09	16.98	2-2		995. 150	A	6	2.65	15.05	4-5	$a^3F - z^3G^o \dagger$
							997. 599	A	6*	2.68	15.05	3-4	
							999. 376	A	5	2.70	15.05	2-3	

Fe III—Continued

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
*991.232	A	9	2.65	15.10	4-3	$a^3F - z^3D^\circ \dagger$ (22)	1142.955	A	5	3.81	14.61	3-4	$a^3D - z^3F^\circ \dagger$ (39)
990.800	A	6	2.68	15.14	3-2		1142.464	A	4	3.79	14.60	2-3	
990.235	A	4	2.70	15.16	2-1		1143.67	A	3	3.79	14.59	1-2	
967.197	A	6	2.65	15.41	4-3	$a^3F - y^3D^\circ \dagger$ (23)	1063.872	A	8	3.81	15.41	3-3	$a^3D - y^3D^\circ \dagger$ (40)
968.955	A	4	2.68	15.42	3-2		1061.708	A	6	3.79	15.42	2-2	
969.954	A	3	2.70	15.43	2-1		1061.245	A	5	3.79	15.43	1-1	
880.949	A	6	2.65	16.66	4-3	$a^3F - x^3D^\circ$ (24)	1019.789	A	6	3.81	15.91	3-2	$a^3D - y^3P^\circ$ (41)
880.447	A	6	2.68	16.70	3-2		1021.561	A	4	3.79	15.88	2-1	
882.147	A	4	2.70	16.69	2-1		1024.108	A	3	3.79	15.85	1-0	
*836.521	A	7	2.65	17.41	4-4	$a^3F - v^3F^\circ$ (25)							
840.381	A	5	2.68	17.37	3-3		991.829	A	6	3.81	16.26	4-5	$a^1G - z^1H^\circ$ (42)
841.088	A	5	2.70	17.38	2-2								
1066.181	A	10b*	3.03	14.61	5-4	$a^3G - z^3F^\circ \dagger$ (26)	834.944	A	6	3.81	18.60	4-3	$a^1G - w^1F^\circ$ (43)
1071.746	A	5	3.08	14.60	4-3								
1075.024	A	4	3.10	14.59	3-2								
1066.143	A	10b*	3.03	14.61	5-6	$a^3G - z^3H^\circ$	962.655	A	5	4.30	17.12	0-1	$a^1S - z^1P^\circ$ (44)
1068.190	A	5	3.08	14.64	4-5								
1069.019	A	5	3.10	14.65	3-4								
1026.790	A	6	3.03	15.05	5-5	$a^3G - z^3G^\circ \dagger$ (28)	961.901	A	7	4.42	17.25	2-2	$a^1D - y^1D^\circ$ (45)
1030.924	A	6	3.08	15.05	4-4								
1033.298	A	5	3.10	15.05	3-3								
*991.232	A	9	3.03	15.49	5-4	$a^3G - y^3F^\circ$ (29)	955.572	A	5	4.42	17.34	2-3	$a^1D - y^1F^\circ$ (46)
993.080	A	7	3.08	15.51	4-3								
994.724	A	6	3.10	15.51	3-2								
881.088	A	7	3.03	17.04	5-5	$a^3G - x^3G^\circ$ (30)							
883.688	A	6	3.08	17.05	4-4								
884.600	A	5	3.10	17.06	3-3								
851.150	A	7	3.03	17.54	5-4	$a^3G - u^3F^\circ \dagger$ (31)	Air						
851.992	A	6	3.08	17.57	4-3		2418.568	A	7	5.06	10.16	2-3	$a^4S - z^4P^\circ$ (47)
851.842	A	6	3.10	17.60	3-2		2438.174	A	8	5.06	10.12	2-2	
842.020	A	6	3.03	17.69	5-6	$a^3G - w^3H^\circ \dagger$ (32)							
847.700	A	6	3.08	17.64	4-5		2078.989	A	14	5.06	11.00	2-3	$a^4S - z^4P^\circ$ (48)
849.524	A	5	3.10	17.64	3-4		2068.243	A	12	5.06	11.03	2-2	
							2061.552	A	10	5.06	11.05	2-1	
*838.048	A	8	3.03	17.76	5-5	$a^3G - v^3G^\circ \dagger$ (33)							
*839.319	A	5	3.08	17.79	4-4								
840.518	A	4	3.10	17.79	3-3								
1895.456	A	20	3.71	10.23	3-4	$a^3S - z^3P^\circ$ (34)	Vac						
1914.056	A	19	3.71	10.16	3-3		*892.417	A	6	7.06	20.90	4-4	$b^1G - v^1G^\circ$ (49)
1926.304	A	18	3.71	10.12	3-2								
*983.877	A	10b	3.75	16.30	6-7	$a^1I - z^1K^\circ$ (35)							
950.334	A	10	3.75	16.74	6-6	$a^1I - z^1I^\circ$ (36)	1987.503	A	15	7.83	14.04	6-6	$a^4G - z^4G^\circ \dagger$ (50)
							1991.613	A	14	7.83	14.03	5-5	
							1994.073	A	13	7.84	14.03	4-4	
							1995.563	A	12	7.84	14.02	3-3	
							*1996.420	A	12	7.84	14.02	2-2	
							1989.975	A	7	7.83	14.03	6-5	
							1993.262	A	7	7.83	14.03	5-4	
							1995.266	A	7	7.84	14.02	4-3	
							*1996.420	A	12	7.84	14.02	3-2	
899.417	A	8	3.75	17.47	6-6	$a^1I - y^1I^\circ$ (37)	1915.083	A	15	7.83	14.28	6-7	$a^4G - z^4H^\circ \dagger$ (51)
							1922.789	A	15	7.83	14.26	5-6	
873.462	A	8	3.75	17.88	6-5	$a^1I - x^1H^\circ$ (38)	1930.387	A	15	7.84	14.23	4-5	
							1937.345	A	14	7.84	14.21	3-4	
							1943.481	A	14	7.84	14.19	2-3	

Fe III—Continued

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High						Low	High			
Vac														
1890. 669	A	13	7. 83	14. 36	6-5	a ⁵ G - z ⁵ F° (52)	1931. 507	A	14	8. 60	15. 00	4-5	b ⁵ D - y ⁵ F° (61)	
1886. 757	A	12	7. 83	14. 38	5-4		1945. 342	A	12	8. 62	14. 97	3-4		
1866. 305	A	9	7. 84	14. 45	4-3		*1954. 223	A	10b	8. 62	14. 94	2-3		
*1869. 828	A	10	7. 84	14. 44	3-2		1959. 324	A	8	8. 62	14. 92	1-2		
1871. 152	A	9	7. 84	14. 44	2-1		1962. 717	A	5	8. 61	14. 90	0-1		
1892. 140	A	5	7. 83	14. 36	5-5		*1940. 018	A	8	8. 60	14. 97	4-4		
*1887. 471	A	8	7. 84	14. 38	4-4		*1954. 223	A	10b	8. 62	14. 94	3-3		
1866. 554	A	5	7. 84	14. 45	3-3		1961. 230	A	6	8. 62	14. 92	2-2		
*1869. 828	A	10	7. 84	14. 44	2-2		*1964. 260	A	7	8. 62	14. 90	1-1		
							*1966. 201§	A	2	8. 62	14. 90	2-1		
*1849. 960	A	5	7. 83	14. 51	5-4	a ⁵ G - z ⁵ D°† (53)	1877. 989	A	12	8. 60	15. 18	4-4	b ⁵ D - y ⁵ D°† (62)	
1887. 197	A	8	7. 84	14. 38	4-3		*1884. 596	A	8	8. 62	15. 17	2-2		
*1889. 451	A	5	7. 84	14. 37	3-2		*1882. 047	A	10	8. 62	15. 17	1-1		
*1890. 893	A	2	7. 84	14. 37	2-1		*1884. 596	A	8	8. 62	15. 17	3-2		
							1883. 816	A	3	8. 62	15. 17	2-1		
1976. 126	A	8	8. 21	14. 45	3-3	a ⁵ P - z ⁵ F°† (54)	1863. 317	A	4	8. 62	15. 24	1-0		
1982. 076	A	6	8. 21	14. 44	2-2		1882. 979	A	4	8. 62	15. 18	3-4		
1958. 583	A	11	8. 21	14. 51	3-4	a ⁵ P - z ⁵ D°† (55)	*1849. 960	A	5	8. 60	15. 28	4-3	b ⁵ D - z ⁵ P° (63)	
Air							1861. 665	A	3	8. 62	15. 25	2-1		
2001. 258	A	4	8. 21	14. 38	2-3		*1854. 826	A	9b	8. 62	15. 28	3-3		
2006. 262	A	3	8. 22	14. 37	1-2		*1856. 690	A	7	8. 62	15. 27	2-2		
Vac							1859. 955	A	3	8. 62	15. 25	1-1		
*1999. 588	A	9	8. 21	14. 38	3-3		*1854. 826	A	9b	8. 62	15. 28	2-3		
Air							1854. 975	A	5	8. 62	15. 27	1-2		
2003. 491	A	8	8. 21	14. 37	2-2		1858. 542	A	5	8. 61	15. 25	0-1		
2007. 841	A	6	8. 22	14. 37	1-1									
Vac														
1982. 805	A	8	8. 21	14. 43	3-2	a ⁵ P - z ⁵ S° (56)	Air							
1985. 105	A	3	8. 21	14. 43	2-2		2232. 430	A	10	8. 73	14. 26	5-6	b ⁵ G - z ⁵ H° (64)	
1987. 810	A	3	8. 22	14. 43	1-2		2243. 405	A	8	8. 73	14. 23	4-5		
							2252. 268	A	5	8. 73	14. 21	3-4		
							2252. 463	A	4	8. 73	14. 21	4-4		
							2260. 547	A	7	8. 73	14. 19	3-3		
1923. 877	A	7	8. 21	14. 62	3-3	a ⁵ P - y ⁵ P° (57)								
1915. 750	A	2	8. 21	14. 66	2-2		2191. 215	A	8	8. 73	14. 36	5-5	b ⁵ G - z ⁵ F°† (65)	
1912. 920	A	4	8. 22	14. 67	1-1		2185. 654	A	5	8. 73	14. 38	4-4		
1913. 622	A	4	8. 21	14. 66	3-2		2157. 109	A	2	8. 73	14. 45	3-3		
1910. 401	A	6	8. 21	14. 67	2-1		2183. 980	A	6	8. 73	14. 38	5-4		
*1926. 013§§	A	10	8. 21	14. 62	2-3		2157. 287	A	3	8. 73	14. 45	4-3		
1918. 284	A	7	8. 22	14. 66	1-2			2097. 692	A	12	8. 73	14. 61	5-4	b ⁵ G - z ⁵ F° (66)
								2103. 799	A	12	8. 73	14. 60	4-3	
								2107. 324	A	10	8. 73	14. 59	3-2	
Air								2099. 231	A	5	8. 73	14. 61	4-4	
2144. 282	A	8	8. 60	14. 36	4-5	b ⁵ D - z ⁵ F° (58)								
*2143. 827	A	7	8. 62	14. 38	3-4		2103. 647	A	5	8. 73	14. 60	3-3		
2116. 588	A	7	8. 62	14. 45	2-3			2097. 480	A	15	8. 73	14. 61	5-6	b ⁵ G - z ⁵ H° (67)
2118. 567	A	6	8. 62	14. 44	1-2			*2090. 139	A	12	8. 73	14. 64	4-5	
2118. 415	A	5	8. 61	14. 44	0-1			2084. 349	A	10	8. 73	14. 65	3-4	
2137. 365	A	8	8. 60	14. 38	4-4			2088. 625	A	5	8. 73	14. 64	5-5	
*2120. 767	A	4	8. 62	14. 44	2-2			2084. 515	A	3	8. 73	14. 65	4-4	
2120. 239	A	5	8. 62	14. 44	1-1			Vac						
*2120. 767	A	4	8. 62	14. 44	3-2			1951. 007	A	12	8. 73	15. 05	5-5	b ⁵ G - z ⁵ G°† (68)
2090. 240	A	6	8. 60	14. 51	4-4	b ⁵ D - z ⁵ D° (59)								
*2143. 470	A	8	8. 62	14. 38	3-3			1952. 648	A	11	8. 73	15. 05	4-4	
*2146. 062	A	8	8. 62	14. 37	2-2			*1953. 322	A	13	8. 73	15. 05	3-3	
2145. 616	A	6	8. 62	14. 37	1-1									
2137. 009	A	5	8. 60	14. 38	4-3									
*2146. 062	A	8	8. 62	14. 37	3-2									
2147. 904	A	7	8. 62	14. 37	2-1									
*2146. 339	A	6	8. 62	14. 37	1-0									
2096. 430	A	6	8. 62	14. 51	3-4									
*2143. 470	A	8	8. 62	14. 38	2-3									
*2143. 827	A	7	8. 62	14. 37	1-2									
2143. 76	A	3	8. 61	14. 37	0-1									
						b ⁵ D - y ⁵ P° (60)								
2050. 739	A	7	8. 60	14. 62	4-3			2174. 658	A	15	9. 10	14. 78	2-2	c ⁵ P - z ⁵ P° (70)
2044. 970	A	4	8. 62	14. 66	3-2			2166. 952	A	12	9. 12	14. 81	1-1	
2038. 908	A	2	8. 62	14. 67	2-1			2161. 270	A	10	9. 10	14. 81	2-1	
2036. 845	A	2	8. 62	14. 67	1-1			2157. 710	A	12	9. 12	14. 84	1-0	
								2180. 410	A	12	9. 12	14. 78	1-2	
								2171. 045	A	12	9. 13	14. 81	0-1	

Fe III—Continued

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air							Vac						
2056. 145	A	7	9. 10	15. 10	2-3	c ³ P - z ³ D°	1550. 196	A	12n	10. 23	18. 19	4-5	³ P° - e ³ D (84)
2049. 384	A	7	9. 12	15. 14	1-2		1538. 632	A	10n	10. 16	18. 19	3-4	
2044. 034	A	3	9. 13	15. 16	0-1		1531. 293	A	6n	10. 12	18. 18	2-3	
2044. 302	A	4	9. 10	15. 14	2-2		1550. 862	A	8n	10. 23	18. 19	4-4	
2040. 407	A	3	9. 12	15. 16	1-1		1539. 128	A	8n	10. 16	18. 18	3-3	
							1531. 644	A	8n	10. 12	18. 18	2-2	
							1551. 377	A	4n	10. 23	18. 18	4-3	
							1539. 480	A	5n	10. 16	18. 18	3-2	
							1531. 864	A	7n	10. 12	18. 18	2-1	
2338. 961	A	10	9. 50	14. 78	3-2	b ³ D - z ³ P°	1505. 166	A	10n	10. 23	18. 43	4-3	³ P° - e ³ S (85)
m2331. 38	P Fe II		9. 52	14. 81	2-1		1493. 640	A	9n	10. 16	18. 43	3-3	
2319. 220	A	10	9. 51	14. 84	1-0		1486. 265	A	7n	10. 12	18. 43	2-3	
*2346. 961§	A	3	9. 52	14. 78	2-2								
2329. 905	A	9	9. 51	14. 81	1-1								
2257. 406	A	8	9. 50	14. 97	3-4	b ³ D - y ³ F°	1984. 027	A	7	10. 17	16. 39	3-4	c ³ D - x ³ F°† (86)
2276. 870	A	8	9. 52	14. 94	2-3								
2284. 979	A	5n	9. 51	14. 92	1-2								
2202. 458	A	8	9. 50	15. 10	3-3	b ³ D - z ³ D°†	2012. 677	A	4	10. 17	16. 31	2-3	
2195. 866	A	5	9. 52	15. 14	2-2		2015. 067	A	3	10. 18	16. 31	1-2	
2173. 829	A	7	9. 50	15. 18	3-4	b ³ D - y ³ D°†	2011. 539	A	4	10. 17	16. 31	3-3	
2186. 207	A	2	9. 52	15. 16	2-3								
2179. 258	A	6	9. 50	15. 16	3-3								
2182. 889	A	4	9. 52	15. 17	2-2								
2136. 360	A	5	9. 50	15. 28	3-3	b ³ D - x ³ P°	2973. 896	A	5	10. 29	14. 44	2-2	
2143. 045	A	7	9. 52	15. 28	2-3		3002. 99	A	5	10. 32	14. 44	1-1	
2087. 132	A	8	9. 50	15. 41	3-3	b ³ D - y ³ D°	2948. 388	A	8	10. 27	14. 45	4-3	
2091. 312	A	7	9. 52	15. 42	2-2		2963. 230	A	8	10. 28	14. 44	3-2	
2087. 907	A	7	9. 51	15. 43	1-1		2977. 222	A	6	10. 29	14. 44	2-1	
2084. 968	A	5	9. 50	15. 42	3-2		3015. 230	A	7	10. 27	14. 36	4-5	
2089. 089	A	6	9. 52	15. 43	2-1		3008. 506	A	5	10. 28	14. 38	3-4	
2093. 504	A	4	9. 52	15. 41	2-3		2907. 497	A	10	10. 26	14. 51	5-4	³ F - z ³ D° (88)
2061. 751	A	9	9. 50	15. 49	3-4	b ³ D - y ³ F°†	3000. 87	P	10	10. 27	14. 38	4-3	
2059. 677	A	7	9. 52	15. 51	2-3		3012. 85	P	10	10. 28	14. 37	3-2	
2057. 058	A	6	9. 51	15. 51	1-2		3027. 46	A	3	10. 29	14. 37	2-1	
Vac							3055. 55	A	5	10. 33	14. 37	1-0	
1924. 532	A	6	9. 50	15. 91	3-2	b ³ D - y ³ P°†	3007. 802	A	6	10. 28	14. 38	3-3	
1941. 633	A	3	9. 52	15. 88	2-1		3023. 85	A	8	10. 29	14. 37	2-2	
1949. 462	A	2	9. 51	15. 85	1-0		3054. 134	A	6	10. 33	14. 37	1-1	
							*2915. 980	A	2	10. 28	14. 51	3-4	
							3018. 744	A	6	10. 29	14. 38	2-3	
							3050. 463	A	5	10. 33	14. 37	1-2	
Air							2865. 54	A	3	10. 29	14. 60	2-3	³ F - z ³ F° (89)
2595. 622	A	8	9. 86	14. 61	7-6	a ³ I - z ³ H°	2741. 952	A	2	10. 28	14. 78	3-2	³ F - z ³ P° (90)
*2582. 37§	A	8	9. 86	14. 64	6-5								
2574. 838	A	7	9. 86	14. 65	5-4								
Vac							2608. 112	A	7	10. 26	15. 00	5-5	³ F - y ³ F°† (91)
*1992. 017	A	9	9. 86	16. 05	7-7	a ³ I - z ³ I°	2625. 268	A	3	10. 27	14. 97	4-4	
*1999. 588	A	9	9. 86	16. 03	6-6		2646. 751	A	6	10. 28	14. 94	3-3	
1984. 288	A	9	9. 86	16. 08	5-5		2641. 408	A	5	10. 27	14. 94	4-3	
1983. 676	A	2	9. 86	16. 08	6-5		2659. 614	A	4	10. 28	14. 92	3-2	
1992. 196	A	9	9. 86	16. 05	6-7		2537. 934	A	2	10. 28	15. 14	3-2	³ F - z ³ D° (92)
2000. 228	A	9	9. 86	16. 03	5-6		2531. 890	A	5	10. 29	15. 16	2-1	
1960. 318	A	13	9. 86	16. 15	7-8	a ³ I - z ³ K°	2556. 207	A	5	10. 28	15. 10	3-3	
1953. 488	A	10	9. 86	16. 18	6-7		2545. 750	A	3	10. 29	15. 14	2-2	
1964. 776	A	8	9. 86	16. 14	5-6		*2511. 418§	A	6	10. 26	15. 18	5-4	³ F - y ³ D° (93)
*1953. 322	A	13	9. 86	16. 18	7-7		2520. 162	A	5	10. 27	15. 16	4-3	
1964. 169	A	8	9. 86	16. 14	6-6		2512. 902	A	2	10. 27	15. 18	4-4	
*1964. 019	A	5b	9. 86	16. 14	7-6								
1907. 577	A	10	9. 86	16. 33	7-6	a ³ I - y ³ H°†	Vac						
1896. 803	A	9	9. 86	16. 37	6-5		1902. 076	A	5	10. 27	16. 76	4-5	³ F - y ³ G° (94)
1893. 981	A	11	9. 86	16. 38	5-4								

Fe III—Continued

Fe III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1901. 096	A	9	10. 26	16. 76	5-6	<i>a</i> 5F — <i>y</i> $^5G^\circ$ (95)	*2241. 54§	A	12	10. 72	16. 23	2-2	<i>b</i> 1D — <i>z</i> $^1D^\circ$ (109)
1917. 351	A	8	10. 27	16. 70	4-5								
1923. 003	A	7	10. 28	16. 70	3-4								
1932. 818	A	5	10. 29	16. 68	2-3								
1949. 666	A	3	10. 33	16. 66	1-2								
1916. 507	A	5	10. 26	16. 70	5-5								
1920. 186	A	4	10. 27	16. 70	4-4								
*1928. 285	A	5b	10. 28	16. 68	3-3								
*1938. 775	A	4	10. 29	16. 66	2-2								
1885. 125	A	9	10. 26	16. 81	5-5	<i>a</i> 5F — <i>x</i> $^5F^\circ$ † (96)	2262. 888	A	3	10. 85	16. 31	3-3	<i>b</i> 1F — <i>x</i> $^1F^\circ$ (111)
1892. 890	A	5	10. 27	16. 79	4-4								
1894. 933	A	4	10. 28	16. 79	3-3								
m1895. 41	P	Fe III	10. 29	16. 80	2-2								
1901. 540	A	3	10. 33	16. 82	1-1								
1892. 073	A	5	10. 26	16. 79	5-4								
1892. 247	A	5	10. 27	16. 79	4-3								
1891. 070	A	4	10. 28	16. 80	3-2								
1891. 186	A	3	10. 29	16. 82	2-1								
1885. 947	A	5	10. 27	16. 81	4-5								
1849. 407	A	7	10. 26	16. 94	5-4	<i>a</i> 4F — <i>x</i> $^4D^\circ$ † (97)	2373. 904	A	5	10. 98	16. 18	6-7	<i>b</i> 3H — <i>z</i> $^3K^\circ$ (115)
1842. 927	A	5	10. 27	16. 96	4-3								
1841. 387	A	3	10. 28	16. 98	3-2								
*1844. 942	A	3	10. 29	16. 98	2-1								
1854. 384	A	3	10. 33	16. 98	1-0								
1850. 200	A	5	10. 27	16. 94	4-4								
*1845. 521	A	{ 7	10. 28	16. 96	3-3								
		7	10. 29	16. 98	2-2								
Air													
2144. 743	A	7	10. 30	16. 05	6-7	<i>b</i> 1I — <i>z</i> $^1I^\circ$ (98)							
2153. 320	A	3	10. 30	16. 03	6-6								
2134. 861	A	9	10. 30	16. 08	6-5								
2070. 539	A	8	10. 30	16. 26	6-5	<i>b</i> 1I — <i>z</i> $^1H^\circ$ (99)	1601. 211	A	10n	11. 00	18. 71	3-4	<i>z</i> $^4P^\circ$ — <i>e</i> 4D (118)
2058. 560	A	8	10. 30	16. 30	6-7	<i>b</i> 1I — <i>z</i> $^1K^\circ$ (100)	*1607. 723	A	9n	11. 03	18. 71	2-3	
Vac							1611. 763	A	7n	11. 05	18. 71	1-2	
1917. 453	A	9	10. 30	16. 74	6-6	<i>b</i> 1I — <i>z</i> $^1I^\circ$ (101)	*1601. 289	A	6n	11. 00	18. 71	3-3	
							*1607. 723	A	9n	11. 03	18. 71	2-2	
							1611. 723	A	7n	11. 05	18. 71	1-1	
							*1601. 289	A	6n	11. 00	18. 71	3-2	
Air													
2923. 902	A	8	10. 39	14. 61	4-4	<i>c</i> 3F — <i>z</i> $^3F^\circ$ (102)							
2977. 572	A	5	10. 45	14. 60	3-3								
2958. 286	A	6	10. 42	14. 59	2-2								
2421. 514	A	5	10. 39	15. 49	4-4	<i>c</i> 3F — <i>y</i> $^3F^\circ$ (103)	*2813. 241**	A	10	11. 10	15. 49	5-4	<i>c</i> 3G — <i>y</i> $^3F^\circ$ (120)
2420. 405	A	3	10. 42	15. 51	2-2		2788. 258	A	6	11. 08	15. 51	4-3	
2123. 590	A	8	10. 42	16. 23	2-2	<i>c</i> 3F — <i>z</i> $^1D^\circ$ (104)	2778. 868	A	5	11. 07	15. 51	3-2	
2055. 855	A	6	10. 39	16. 39	4-4	<i>c</i> 3F — <i>x</i> $^3F^\circ$ (105)	*2803. 441§	A	6	11. 08	15. 49	4-4	
2108. 676	A	5	10. 45	16. 31	3-3		m2360. 28	P	Fe II	11. 10	16. 33	5-6	<i>c</i> 3G — <i>y</i> $^3H^\circ$ (121)
2086. 128	A	4	10. 39	16. 31	4-3		*2336. 768§	A	10	11. 08	16. 37	4-5	
2077. 755	A	4	10. 45	16. 39	3-4		2326. 948	A	10	11. 07	16. 38	3-4	
2095. 327	A	3	10. 42	16. 31	2-3		2181. 407	A	4	11. 10	16. 76	5-5	<i>c</i> 4G — <i>y</i> $^4G^\circ$ (122)
Vac							2184. 114	A	4	11. 08	16. 73	4-4	
1938. 901	A	10	10. 39	16. 76	4-5	<i>c</i> 3F — <i>y</i> $^3G^\circ$ † (106)	2228. 881	A	4	11. 07	16. 61	3-3	
1965. 309	A	8	10. 45	16. 73	3-4		2190. 075	A	3	11. 10	16. 73	5-4	
1992. 858	A	6	10. 42	16. 61	2-3		2233. 172	A	4	11. 08	16. 61	4-3	
*1940. 018	A	8	10. 39	16. 75	4-3	<i>c</i> 3F — <i>w</i> $^3D^\circ$ (107)	2181. 210	A	2	11. 10	16. 76	5-6	<i>c</i> 4G — <i>y</i> $^4G^\circ$ (123)
1919. 572	A	4	10. 42	16. 85	2-1		2195. 532	A	6	11. 08	16. 70	4-5	
1906. 457	A	6	10. 39	16. 86	4-4	<i>c</i> 3F — <i>w</i> $^3F^\circ$ † (108)	2195. 081	A	5	11. 07	16. 70	3-4	
1918. 480	A	7	10. 45	16. 89	3-3		2067. 302	A	6	11. 10	17. 07	5-6	<i>c</i> 4G — <i>x</i> $^4H^\circ$ (124)
							2083. 530	A	6	11. 08	17. 01	4-5	
							2090. 053	A	7	11. 07	16. 98	3-4	

Fe III—Continued

Fe III—Continued

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	E P		J	Multiplet (No)		
			Low	High					Low	High				
Air														
2907. 701	A	12	11. 17	15. 41	4-3	d 4F -y 4D° (125)	*2447. 374	A	7	11. 54	16. 59	4-4	c 1G -z 1G° (143)	
2904. 431	A	12	11. 17	15. 42	3-2									
*2895. 076	A	8	11. 16	15. 43	2-1		2319. 466	A	8	11. 54	16. 86	4-4	c 1G -w 1F° (144)	
2908. 651	A	5	11. 17	15. 41	3-3		2309. 578	A	4	11. 54	16. 89	4-3		
*2899. 386	A	4	11. 16	15. 42	2-2									
*2858. 664	A	7	11. 17	15. 49	4-4	d 4F -y 4F°† (126)	2158. 472	A	12	11. 54	17. 26	4-4	c 1G -y 1G° (145)	
2843. 779	A	4	11. 17	15. 51	3-3									
*2836. 107	A	4	11. 16	15. 51	2-2									
2277. 820	A	8	11. 17	16. 59	4-4	d 4F -z 4G° (127)	2105. 020	A	5	11. 54	17. 41	4-4	c 1G -v 1F° (146)	
2278. 432	A	6	11. 17	16. 59	3-4		Vac	1957. 938	A	6	11. 54	17. 85	4-5	c 1G -y 1H° (147)
2229. 267	A	10	11. 17	16. 70	4-5	d 4F -y 4G° (128)								
2233. 654	A	6	11. 17	16. 70	3-4									
2245. 776	A	4	11. 16	16. 66	2-2									
2100. 961	A	8	11. 17	17. 04	4-5	d 4F -x 4G°† (129)	*2905. 80	A	8	11. 98	16. 23	3-2	c 1F -z 1D° (148)	
2099. 332	A	6	11. 17	17. 05	3-4									
2092. 945	A	6	11. 16	17. 06	2-3									
2551. 098	A	6	11. 42	16. 26	5-5	a 1H -z 1H° (130)	2552. 937	A	5	11. 98	16. 81	3-3	c 1F -z 1F° (150)	
2389. 533	A	8	11. 42	16. 59	5-4	a 1H -z 1G° (131)	2339. 913	A	5	11. 98	17. 25	3-2	c 1F -y 1D° (151)	
*2321. 71§	A	10	11. 42	16. 74	5-6	a 1H -z 1I° (132)	2302. 808	A	8	11. 98	17. 34	3-3	c 1F -y 1F° (152)	
2267. 42	A	10	11. 42	16. 86	5-4	a 1H -w 4F° (133)	*2274. 00§	A	8	11. 98	17. 41	3-4	c 1F -v 1F° (153)	
2039. 507	A	6	11. 42	17. 47	5-6	a 1H -y 4I° (134)	Vac	2290. 126	A	5	11. 98	17. 37	3-3	
Vac														
1911. 338	A	7	11. 42	17. 88	5-5	a 1H -z 1H° (135)	1865. 202	A	7	11. 98	18. 60	3-3	c 1F -w 1F° (154)	
Air														
2608. 682	A	5	11. 53	16. 26	4-5	e 4F -z 4H° (136)	2850. 288	A	7	13. 08	17. 41	3-4	d 4D -v 4F° (155)	
2537. 537	A	4	11. 53	16. 39	4-4	e 4F -x 4F°	2873. 795	A	4	13. 07	17. 37	2-3		
2584. 038	A	6	11. 53	16. 31	3-2		2868. 136	A	5	13. 07	17. 38	1-2		
2583. 739	A	3	11. 53	16. 31	2-2									
2303. 203	A	3	11. 53	16. 89	3-3	e 4F -w 4F° (138)								
2303. 012	A	7	11. 53	16. 89	4-3									
2238. 155	A	10	11. 53	17. 04	4-5	e 4F -x 4G° (139)	2818. 624	A	6	13. 53	17. 91	2-3	c 1D -z 1F° (157)	
2235. 908	A	10	11. 53	17. 05	3-4									
2232. 690	A	10	11. 53	17. 06	2-3									
*2235. 699	A	6	11. 53	17. 05	4-4									
2231. 670	A	4	11. 53	17. 06	3-3									
2169. 709	A	5	11. 53	17. 22	4-5	e 4F -w 4G° (140)	2695. 13	A	10n	18. 19	22. 77	5-6	e 7D -z 7F° (159)	
2162. 283	A	5	11. 53	17. 24	3-4		2695. 34	A	9n	18. 19	22. 77	4-5		
2160. 655	A	6	11. 53	17. 24	2-3		2696. 89	A	7n	18. 18	22. 76	3-4		
2152. 706	A	6	11. 53	17. 26	4-4	e 4F -y 4G° (141)	2700. 02	A	8n	18. 18	22. 75	2-3		
							2704. 43	A	3n	18. 18	22. 75	1-2		
2617. 149	A	8	11. 54	16. 26	4-5	e 4G -z 4H° (142)	m2697. 37	P	Fe II	18. 19	22. 77	5-5		
							2698. 41	A	7n	18. 19	22. 76	4-4		
							2701. 13	A	8n	18. 18	22. 75	3-3		
							2705. 10	A	7n	18. 18	22. 75	2-2		
							2706. 17	A	2n	18. 18	22. 75	3-2		

COBALT, Z=27

Co I

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 $\xi = \text{Co II?}$

Co I

Co I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
*2820. 002	A	4	0. 00	4. 38	4½ - 3½	a 4F - y 3F°†	2407. 249	A	150	0. 00	5. 13	4½ - 5½	a 4F - x 4G°
2814. 976	A	2	0. 10	4. 48	3½ - 2½	(1)	2411. 618	A	100	0. 10	5. 22	3½ - 4½	(6)
2886. 444	A	4	0. 10	4. 38	3½ - 3½		2414. 458	A	20	0. 17	5. 29	2½ - 3½	
2862. 602	A	(4)	0. 17	4. 48	2½ - 2½		2415. 29	A	4	0. 22	5. 33	1½ - 2½	
							2365. 057	A	20	0. 00	5. 22	4½ - 4½	
2833. 922	A	(3)	0. 10	4. 46	3½ - 2½	a 4F - y 3D°†	*2380. 483	A	15	0. 10	5. 29	3½ - 3½	
2818. 592	A	(3)	0. 17	4. 55	2½ - 1½	(2)	2392. 029	A	10	0. 17	5. 33	2½ - 2½	
2850. 947	A	(3)	0. 22	4. 55	1½ - 1½		2335. 102	A	7	0. 00	5. 29	4½ - 3½	
							2358. 676	A	7	0. 10	5. 33	3½ - 2½	
2521. 361	F	100	0. 00	4. 89	4½ - 3½	a 4F - x 4D°	2429. 226	A	7	0. 10	5. 18	3½ - 2½	a 4F - z 4P°
2528. 968	F	70	0. 10	4. 98	3½ - 2½	(3)	2463. 776	A	2	0. 17	5. 18	2½ - 1½	(7)
2535. 961	A	50	0. 17	5. 04	2½ - 1½		2489. 249	A	2	0. 22	5. 18	1½ - 0½	
2544. 252	A	30	0. 22	5. 07	1½ - 0½		2464. 615	A	3	0. 17	5. 18	2½ - 2½	
2574. 351	A	25	0. 10	4. 89	3½ - 3½		2488. 461	A	8	0. 22	5. 18	1½ - 1½	
2567. 344	A	30	0. 17	4. 98	2½ - 2½								
2562. 124	A	20	0. 22	5. 04	1½ - 1½								
2614. 124	A	2	0. 17	4. 89	2½ - 3½		2370. 514	A	6	0. 10	5. 31	3½ - 3½	a 4F - 3°
2594. 161	A	2	0. 22	4. 98	1½ - 2½								(8)
2549. 296	A	3	0. 17	5. 01	2½ - 1½	a 4F - z 4S°†	2372. 832	A	3	0. 17	5. 37	2½ - 1½	a 4F - z 4P°
						(4)							(9)
2424. 932	A	50	0. 00	5. 09	4½ - 4½	a 4F - x 4F°†	2303. 504	A	9	0. 00	5. 36	4½ - 3½	a 4F - w 4D°
2432. 213	A	40	0. 10	5. 17	3½ - 3½	(5)	2356. 267	A	12	0. 10	5. 34	3½ - 2½	(10)
2436. 663	F	30	0. 17	5. 24	2½ - 2½		2388. 374	A	8	0. 17	5. 34	2½ - 1½	
2439. 038	A	20	0. 22	5. 28	1½ - 1½		2401. 595	A	10	0. 22	5. 36	1½ - 0½	
2384. 858	A	20	0. 00	5. 17	4½ - 3½		2347. 657	A	3	0. 10	5. 36	3½ - 3½	
2402. 058	A	25	0. 10	5. 24	3½ - 2½		m2389. 55	P	Co II	0. 17	5. 34	2½ - 2½	
2473. 901	A	1	0. 10	5. 09	3½ - 4½		m2411. 57	P	Co I	0. 22	5. 34	1½ - 1½	
2467. 685	A	6	0. 17	5. 17	2½ - 3½		2380. 696	A	5	0. 17	5. 36	2½ - 3½	
2460. 800	A	5	0. 22	5. 24	1½ - 2½		2412. 762	A	15	0. 22	5. 34	1½ - 2½	

Ce I—Continued

Co I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2309. 03	P	30	0. 00	5. 34	4½ - 4½	a 4F - w 4F°	2132. 76	I	30	0. 00	5. 79	4½ - 3½	a 4F - w 4D°
2323. 131	A	25	0. 10	5. 41	3½ - 3½	(11)	2146. 26	I	25	0. 10	5. 85	3½ - 2½	(23)
2335. 98	P	20	0. 17	5. 46	2½ - 2½		2163. 56	I	25	0. 17	5. 88	2½ - 1½	
2338. 656	A	8	0. 22	5. 50	1½ - 1½		2168. 70	I	50	0. 22	5. 91	1½ - 0½	
m2279. 90	P	Fct	0. 00	5. 41	4½ - 3½		2170. 55	I	25	0. 10	5. 79	3½ - 3½	
2304. 182	A	15	0. 10	5. 46	3½ - 2½		2173. 82	I	20	0. 17	5. 85	2½ - 2½	
*2316. 843	A	8	0. 17	5. 50	2½ - 1½		2182. 59	I	20	0. 22	5. 88	1½ - 1½	
2353. 36	A	10	0. 10	5. 34	3½ - 4½		2198. 75	I	8	0. 17	5. 79	2½ - 3½	
2355. 480	A	30	0. 17	5. 41	2½ - 3½		2116. 83	I	30	0. 00	5. 83	4½ - 3½	a 4F - w 4F°
2358. 177	A	7	0. 22	5. 46	1½ - 2½		2158. 55	I	12	0. 10	5. 82	3½ - 2½	(24)
2295. 223	A	20	0. 00	5. 38	4½ - 3½	a 4F - x 2F°	2154. 08	I	20	0. 10	5. 83	3½ - 3½	
2346. 161	A	10	0. 10	5. 36	3½ - 2½	(12)	2186. 45	I	8	0. 17	5. 82	2½ - 2½	
2339. 048	A	6	0. 10	5. 38	3½ - 3½		2089. 67	I	10	0. 00	5. 91	4½ - 3½	a 4F - 6°
2379. 160	A	6	0. 17	5. 36	2½ - 2½		2125. 96	I	10	0. 10	5. 91	3½ - 3½	(25)
2371. 845	A	5	0. 17	5. 38	2½ - 3½		2163. 02	I	20	0. 22	5. 93	1½ - 0½	a 4F - x 2S°
2402. 164	A	25	0. 22	5. 36	1½ - 2½		2130. 27	I	15	0. 17	5. 97	2½ - 1½	a 4F - x 2P°
2319. 152	A	4	0. 10	5. 42	3½ - 2½	a 4F - x 2D°†	2148. 70	I	12	0. 22	5. 97	1½ - 1½	(27)
2351. 385	A	6	0. 17	5. 42	2½ - 2½	(13)	2073. 27	I	20£	0. 00	5. 95	4½ - 3½	a 4F - t 4D°
2373. 862	A	10	0. 22	5. 42	1½ - 2½		2098. 93	I	20	0. 10	5. 98	3½ - 2½	(28)
2274. 495	A	40	0. 00	5. 43	4½ - 5½	a 4F - w 4G°	2120. 70	I	20	0. 17	5. 99	2½ - 1½	
2305. 169	A	20	0. 10	5. 45	3½ - 4½	(14)	2137. 80	I	15	0. 22	6. 00	1½ - 0½	
2325. 530	A	20	0. 17	5. 48	2½ - 3½		2108. 98	I	25	0. 10	5. 95	3½ - 3½	
2337. 95	A	7	0. 22	5. 50	1½ - 2½		2125. 32	I	15£	0. 17	5. 98	2½ - 2½	
2262. 592	A	18	0. 00	5. 45	4½ - 4½		2138. 98	I	12	0. 22	5. 99	1½ - 1½	
2294. 003	A	25	0. 10	5. 48	3½ - 3½		2135. 59	I	10	0. 17	5. 95	2½ - 3½	
2316. 157	A	12	0. 17	5. 50	2½ - 2½		2143. 66	I	10	0. 22	5. 98	1½ - 2½	
2251. 83	A	2	0. 00	5. 48	4½ - 3½		2069. 00	I	20£	0. 00	5. 96	4½ - 3½	a 4F - v 2F°
2284. 86	A	3	0. 10	5. 50	3½ - 2½		2091. 40	I	10	0. 10	6. 00	3½ - 2½	(29)
2289. 495	A	10	0. 10	5. 49	3½ - 2½	a 4F - y 4P°†	2131. 06	I	10	0. 17	5. 96	2½ - 3½	
*2311. 38	H	10d	0. 17	5. 51	2½ - 1½	(15)	2135. 80	I	12	0. 22	6. 00	1½ - 2½	
2322. 260	A	3	0. 22	5. 54	1½ - 0½		2082. 11	I	12	0. 10	6. 03	3½ - 2½	a 4F - 7°†
2320. 906	A	5	0. 17	5. 49	2½ - 2½		2111. 42	I	25	0. 17	6. 02	2½ - 1½?	(31)
2333. 071	A	10	0. 22	5. 51	1½ - 1½		2129. 50	I	10	0. 22	6. 02	1½ - 1½?	(30)
2227. 853	A	15	0. 10	5. 64	3½ - 2½	a 4F - w 2D°	2085. 04	I	9	0. 17	6. 05	2½ - 1½?	a 4F - w 2P°
2219. 16	A	20	0. 17	5. 73	2½ - 1½	(16)	2031. 96	I	15	0. 00	6. 07	4½ -	a 4F - 9°
2257. 582	A	15	0. 17	5. 64	2½ - 2½		2066. 22	I	12	0. 10	6. 07	3½ -	(33)
2278. 30	A	3	0. 22	5. 64	1½ - 2½		2099. 35	I	15	0. 17	6. 05	2½ - 1½?	a 4F - 7°†
2184. 31	I	15	0. 00	5. 65	4½ - 3½	a 4F - x 2G°†	2085. 04	I	9	0. 22	6. 14	1½ - 0½	(32)
2212. 35	I	20	0. 10	5. 68	3½ - 2½	a 4F - x 2P°†	2031. 96	I	15	0. 00	6. 07	4½ -	
2246. 599	A	25	0. 17	5. 67	2½ - 1½	(18)	2066. 22	I	12	0. 10	6. 07	3½ -	
2267. 113	A	10	0. 22	5. 67	1½ - 1½		2054. 06	I	12	0. 10	6. 11	3½ - 3½	a 4F - 10°†
2174. 589	A	50N	0. 00	5. 68	4½ - 3½	a 4F - v 4D°	2079. 37	I	12	0. 17	6. 11	2½ - 3½	(34)
2196. 458	A	40	0. 10	5. 72	3½ - 2½	(19)	2081. 04	I	10	0. 22	6. 15	1½ - 2½	a 4F - 11°†
2228. 80	I	8	0. 17	5. 71	2½ - 1½		2052. 82	I	6	0. 17	6. 19	2½ - 1½?	a 4F - 12°
2236. 796	A	15	0. 22	5. 74	1½ - 0½		2069. 91	I	12	0. 22	6. 19	1½ - 1½?	(36)
m2213. 89	P	Co I	0. 10	5. 68	3½ - 3½	Vac	m1970. 77	P	Co I	0. 00	6. 26	4½ - 3½	a 4F - s 4D°
2225. 339	A	12	0. 17	5. 72	2½ - 2½		1987. 15	I	12?	0. 10	6. 31	3½ - 2½	(37)
2248. 981	A	9	0. 22	5. 71	1½ - 1½		1982. 52	I	20	0. 17	6. 40	2½ - 1½	
2243. 254	A	(8)	0. 17	5. 68	2½ - 3½		1981. 97	I	20	0. 22	6. 45	1½ - 0½	
2245. 463	A	6	0. 22	5. 72	1½ - 2½		2002. 32	I	25£	0. 10	6. 26	3½ - 3½	(Air)
2180. 060	A	40N	0. 10	5. 76	3½ - 2½	a 4F - v 2D°†	2010. 10	I	20	0. 17	6. 31	2½ - 2½	(Air)
2232. 460	A	5	0. 17	5. 70	2½ - 1½	(20)	1998. 49	I	25†	0. 22	6. 40	1½ - 1½?	(Vac)
2208. 508	A	25	0. 17	5. 76	2½ - 2½		2026. 51	I	6	0. 22	6. 31	1½ - 2½	(Air)
2252. 712	A	15	0. 22	5. 70	1½ - 1½		1953. 71	I	8	0. 00	6. 32	4½ - 3½	a 4F - 15°
*2213. 84	I	20£	0. 17	5. 75	2½ - 1½	a 4F - y 4S°†	1985. 36	I	10	0. 10	6. 32	3½ - 3½	(38)
2233. 759	A	35	0. 22	5. 75	1½ - 1½	(21)	2008. 28	I	20†	0. 17	6. 32	2½ - 3½	(Air)
2207. 853	A	25	0. 17	5. 76	2½ - 1½	a 4F - y 2P°	1953. 71	I	8	0. 00	6. 32	4½ - 3½	
2207. 71	I	25	0. 22	5. 81	1½ - 0½	(22)	1985. 36	I	10	0. 10	6. 32	3½ - 3½	
2227. 666	A	10	0. 22	5. 76	1½ - 1½		2008. 28	I	20†	0. 17	6. 32	2½ - 3½	(Air)

Co I—Continued

Co I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)	
			Low	High						Low	High			
Vac														
1926. 90	I	10	0. 00	6. 41	4½-3½	a 4F -t 2F° (39)	Air	2511. 019	A	20	0. 43	5. 34	4½-4½	b 4F -w 4F° (56)
1957. 69	I	12N	0. 10	6. 41	3½-3½		2517. 792	A	8	0. 51	5. 41	3½-3½		
1980. 59	I	15	0. 17	6. 41	2½-3½		2530. 134	A	15	0. 58	5. 46	2½-2½		
1961. 26	I	8	0. 22	6. 52	1½-2½?		2532. 176	A	5	0. 63	5. 50	1½-1½		
1976. 97	I	30	0. 17	6. 42	2½-2½	a 4F -17° (40)	2476. 640	A	10	0. 43	5. 41	4½-3½		
1956. 22	I	15	0. 17	6. 48	2½-	a 4F -20° (41)	2495. 551	A	4	0. 51	5. 46	3½-2½		
1971. 75	I	15	0. 22	6. 48	1½-		2507. 678	A	4	0. 58	5. 50	2½-1½		
1884. 45	I	10	0. 00	6. 55	4½-	a 4F -21° (42)	2470. 270	A	6	0. 43	5. 43	4½-5½	b 4F -w 4G° (57)	
1934. 34	I	12	0. 17	6. 56	2½-3½	a 4F -s 2F° (43)	2496. 713	A	5	0. 51	5. 45	3½-4½		
1838. 28	I	15	0. 00	6. 72	4½-3½	a 4F -24°† (44)	2517. 875	F	(2R)	0. 58	5. 48	2½-3½		
1834. 99	I	10£	0. 10	6. 83	3½-3½?	a 4F -v 4F°† (45)	2531. 354	A	5	0. 63	5. 50	1½-2½		
1842. 34	I	25£	0. 17	6. 87	2½-2½?		2456. 22	H	5	0. 43	5. 45	4½-4½		
1852. 71	I	30£	0. 10	6. 76	3½-4½		2483. 613	A	12	0. 51	5. 48	3½-3½		
1855. 05	I	40£	0. 17	6. 83	2½-3½		2506. 873	A	12	0. 58	5. 50	2½-2½		
1856. 13	I	15£	0. 22	6. 87	1½-2½		2443. 548	A	5	0. 43	5. 48	4½-3½		
1820. 42	I	12	0. 00	6. 78	4½-3½	a 4F -26° (46)	2472. 922	A	7	0. 51	5. 50	3½-2½		
1847. 89	I	30	0. 10	6. 78	3½-3½		2406. 266	A	10	0. 51	5. 64	3½-2½	b 4F -w 4D°† (58)	
1814. 20	I	12	0. 00	6. 80	4½-3½	a 4F -28° (47)	2388. 175	A	8	0. 51	5. 68	3½-2½	b 4F -x 4P°†	
1841. 47	I	10	0. 10	6. 80	3½-3½		2425. 593	A	6	0. 58	5. 67	2½-1½		
1832. 47	I	15	0. 10	6. 84	3½-2½	a 4F -29°† (48)	2419. 828	A	4	0. 58	5. 68	2½-2½		
1852. 52	I	15?	0. 17	6. 84	2½-2½		2352. 864	A	10	0. 43	5. 68	4½-3½	b 4F -v 4D° (60)	
1840. 55	I	10	0. 17	6. 88	2½-1½	a 4F -31° (49)	2369. 674	A	10	0. 51	5. 72	3½-2½		
1854. 28	I	8	0. 22	6. 88	1½-1½		2404. 84	A	2	0. 58	5. 71	2½-1½		
1834. 34	I	10	0. 17	6. 90	2½-	a 4F -33° (50)	2413. 187	A	7	0. 63	5. 74	1½-0½		
1828. 35	I	12	0. 17	6. 93	2½-	a 4F -34°† (51)	2389. 984	A	3	0. 51	5. 68	3½-3½		
Air							2400. 833	A	7	0. 58	5. 72	2½-2½		
2764. 188	A	7	0. 43	4. 89	4½-3½	b 4F -x 4D° (52)	2421. 688	A	2	0. 58	5. 68	2½-3½		
2761. 366	A	4	0. 51	4. 98	3½-2½		2303. 966	A	15	0. 43	5. 79	4½-3½	b 4F -u 4D°† (61)	
2766. 382	A	3	0. 58	5. 04	2½-1½		2311. 38	H	10d	0. 51	5. 85	3½-2½		
2774. 960	A	4	0. 63	5. 07	1½-0½		2339. 550	A	10	0. 51	5. 79	3½-3½	b 4F -u 4D°† (62)	
2815. 555	A	7	0. 51	4. 89	3½-3½		2369. 924	A	20	0. 58	5. 79	2½-3½		
2803. 770	A	6	0. 58	4. 98	2½-2½		2362. 327	A	7	0. 63	5. 85	1½-2½		
2796. 228	A	5	0. 63	5. 04	1½-1½		2285. 408	A	15	0. 43	5. 83	4½-3½	b 4F -w 2F°† (63)	
2859. 654	A	8	0. 58	4. 89	2½-3½		2325. 601	G	(3)	0. 51	5. 82	3½-2½		
2834. 428	A	3	0. 63	4. 98	1½-2½		2355. 611	A	8	0. 58	5. 82	2½-2½		
*2648. 635	A	10	0. 43	5. 09	4½-4½	b 4F -x 4F° (53)	2350. 284	A	6	0. 58	5. 83	2½-3½		
2646. 413	A	4	0. 51	5. 17	3½-3½		2377. 215	A	4	0. 63	5. 82	1½-2½		
*2648. 635	A	10	0. 58	5. 24	2½-2½		2290. 541	A	20	0. 58	5. 97	2½-1½	b 4F -x 2P°† (66)	
2650. 266	A	3	0. 63	5. 28	1½-1½		2234. 710	A	4	0. 43	5. 95	4½-3½	b 4F -t 4D°† (67)	
2600. 977	A	3	0. 43	5. 17	4½-3½		2256. 565	A	5	0. 51	5. 98	3½-2½		
2610. 762	A	4	0. 51	5. 24	3½-2½		2279. 480	A	4	0. 58	5. 99	2½-1½		
2623. 440	A	2	0. 58	5. 28	2½-1½		2298. 356	A	6	0. 63	6. 00	1½-0½		
2695. 846	A	7	0. 51	5. 09	3½-4½		2268. 163	A	6	0. 51	5. 95	3½-3½		
2685. 336	A	4	0. 58	5. 17	2½-3½		2296. 704	A	10	0. 58	5. 95	2½-3½		
2675. 980	A	6	0. 63	5. 24	1½-2½		2229. 734	A	10	0. 43	5. 96	4½-3½	b 4F -v 2F°† (68)	
2627. 638	A	10	0. 43	5. 13	4½-5½	b 4F -x 4G°† (54)	2275. 884	A	4	0. 58	6. 00	2½-2½		
*2622. 059	A	5	0. 51	5. 22	3½-4½		2291. 450	A	10	0. 58	5. 96	2½-3½		
2622. 430	A	4	0. 58	5. 29	2½-3½		2268. 742	A	20	0. 58	6. 02	2½-1½	b 4F -x 4S° (69)	
2622. 250	A	3	0. 63	5. 33	1½-2½		2288. 774	A	12	0. 63	6. 02	1½-1½		
2504. 518	A	8	0. 43	5. 36	4½-3½	b 4F -w 4D°† (55)	2268. 742	A	20	0. 58	6. 02	2½-1½		
2556. 762	A	3	0. 51	5. 34	3½-2½		2288. 774	A	12	0. 63	6. 02	1½-1½		
2591. 686	A	3	0. 58	5. 34	2½-1½									
2606. 120	A	4	0. 63	5. 36	1½-0½									

Co I—Continued

Co I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
*2237. 125	A	25	0. 51	6. 03	3½-2½	b ⁴F — 7° (70)	1964. 03	I	20	0. 43	6. 72	4½-3½	b ⁴F-24° (94)
2264. 880	A	30	0. 58	6. 03	2½-2½		1989. 80	I	25£	0. 51	6. 72	3½-3½	(Air)
2284. 375	A	9	0. 63	6. 03	1½-0½	b ⁴F — w ²S° (71)	2011. 06	I	12£	0. 58	6. 72	2½-3½	
2274. 617	A	8	0. 63	6. 05	1½-1½	b ⁴F — w ²P° (72)	1949. 00	I	15	0. 43	6. 76	4½-4½	b ⁴F-v ⁴F°† (95)
2186. 777	A	40	0. 43	6. 07	4½-	b ⁴F — 9° (73)	1954. 22	I	30	0. 51	6. 83	3½-3½	
2218. 81	I	15	0. 51	6. 07	3½-		1961. 00	I	15	0. 58	6. 87	2½-2½	
2173. 173	I	10	0. 43	6. 11	4½-3½	b ⁴F — 10°† (74)	1978. 36	I	10	0. 63	6. 87	1½-1½	
2204. 796	A	30	0. 51	6. 11	3½-3½		1929. 34	I	15	0. 43	6. 83	4½-3½	
1971. 16	I						1940. 16	I	15£	0. 51	6. 87	3½-2½	
*2187. 28	I	25	0. 51	6. 15	3½-2½	b ⁴F — 11°† (75)	1963. 38	I	12	0. 58	6. 87	2½-1½	
*2213. 84	I	20£	0. 58	6. 15	2½-2½		1974. 39	I	15	0. 51	6. 76	3½-4½	
2201. 23	I	10£	0. 58	6. 19	2½-1½	b ⁴F — 12° (76)	1971. 16	I	30N	0. 51	6. 77	3½-4½	b ⁴F-25° (96)
2122. 64	I	10	0. 43	6. 24	4½-3½	b ⁴F — u ²F°† (77)	1936. 58	I	30£	0. 43	6. 80	4½-3½	b ⁴F-28° (98)
2172. 18	I	12	0. 58	6. 26	2½-2½		1951. 44	I	12	0. 51	6. 84	3½-2½	b ⁴F-29° (99)
2152. 15	I	20	0. 51	6. 25	3½-4½	b ⁴F — w ²G°† (78)	1972. 52	I	30N	0. 58	6. 84	2½-2½?	
2145. 46	I	20	0. 51	6. 26	3½-	b ⁴F — 13°† (79)	1987. 65	I	20	0. 63	6. 84	1½-2½	
2115. 35	I	30	0. 43	6. 26	4½-3½	b ⁴F — s ⁴D°† (80)	1946. 79	I	25	0. 51	6. 85	3½-2½	b ⁴F-30° (100)
2127. 14	I	30	0. 51	6. 31	3½-2½		1967. 78	I	10	0. 58	6. 85	2½-2½	
2119. 91	I	20	0. 58	6. 40	2½-1½		1982. 81	I	8	0. 63	6. 85	1½-2½	
2118. 51	I	20	0. 63	6. 45	1½-0½		1958. 94	I	15	0. 58	6. 88	2½-1½	b ⁴F-31° (101)
2186. 030	I	12	0. 63	6. 27	1½-2½	b ⁴F — 14°† (81)	1973. 85	I	25	0. 63	6. 88	1½-1½	b ⁴F-32° (102)
2162. 19	I	15	0. 58	6. 29	2½-1½	b ⁴F — v ²P° (82)	1970. 71	I	50	0. 63	6. 89	1½-1½	b ⁴F-33° (103)
2126. 20	I	12	0. 51	6. 32	3½-2½	b ⁴F — w ⁴P°† (83)	1966. 68	I	9	0. 63	6. 90	1½-	b ⁴F-34° (104)
2112. 40	I	12	0. 58	6. 42	2½-1½		1945. 09	I	12	0. 58	6. 93	2½-	b ⁴F-35° (105)
2114. 42	I	12	0. 63	6. 46	1½-0½		1955. 17	I	30	0. 63	6. 94	1½-	
2125. 10	I	40N	0. 51	6. 32	3½-3½	b ⁴F — 15°† (84)	Air						a ²F-z ²P° (106)
*2094. 86	I	15	0. 51	6. 40	3½-2½	b ⁴F — 16° (85)	2850. 047	A	10	1. 04	5. 37	2½-1½	
2119. 192	I	20	0. 58	6. 40	2½-2½		2874. 196	A	4	1. 04	5. 34	2½-2½	a ²F-w ⁴D° (107)
*2064. 86	I	10	0. 43	6. 41	4½-3½	b ⁴F — t ²F°† (86)	2792. 436	A	4	0. 92	5. 34	3½-2½	
2093. 40	I	40	0. 51	6. 41	3½-3½		2872. 497	A	(3)	1. 04	5. 34	2½-1½	
2117. 68	I	15s	0. 58	6. 41	2½-3½		2746. 028	A	7	0. 92	5. 41	3½-3½	a ²F-w ⁴F°† (108)
*2094. 86	I	15	0. 63	6. 52	1½-2½		*2797. 081	A	5	1. 04	5. 46	2½-2½	
2089. 35	I	15	0. 51	6. 42	3½-2½	b ⁴F — 17°† (87)	2719. 581	A	3	0. 92	5. 46	3½-2½	
2113. 53	I	25	0. 58	6. 42	2½-2½		2740. 457	A	4	0. 92	5. 42	3½-2½	a ²F-x ²D°† (109)
2091. 98	I	12	0. 58	6. 48	2½-3½	b ⁴F — 18° (88)	*2820. 002	A	4	1. 04	5. 42	2½-1½	a ²F-x ²G° (110)
2091. 05	I	15	0. 58	6. 48	2½-1½	b ⁴F — 19°† (89)	2590. 594	A	5	0. 92	5. 68	3½-4½	
							2679. 751	A	4	1. 04	5. 65	2½-3½	
							2644. 772	A	3	1. 04	5. 71	2½-1½	a ²F-v ⁴D°† (111)
2089. 83	I	10	0. 58	6. 48	2½-	b ⁴F — 20° (90)	2548. 333	A	5	0. 92	5. 76	3½-2½	a ²F-v ⁴D° (112)
2106. 82	I	50N£	0. 63	6. 48	1½-		2649. 931	A	3	1. 04	5. 70	2½-1½	
2016. 17	I	15£	0. 43	6. 55	4½-	b ⁴F — 21° (91)	2616. 260	A	3	1. 04	5. 76	2½-2½	
2043. 37	I	8	0. 51	6. 55	3½-		2512. 900	A	5	0. 92	5. 83	3½-3½	a ²F-w ²F°† (113)
2039. 95?	I	25£	0. 51	6. 56	3½-2½?	b ⁴F — s ²F°† (92)	2585. 335	A	3	1. 04	5. 82	2½-2½	
2000. 12	I	12N	0. 43	6. 60	4½-3½	b ⁴F — 22° (93)	2518. 988	A	3	0. 92	5. 82	3½-2½	
							2357. 507	A	10	0. 92	6. 15	3½-2½	a ²F-11° (114)

Co I—Continued

Co I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2400. 558	A	8	1. 04	6. 19	$2\frac{1}{2} - 1\frac{1}{2}$	$a^2F - 12^\circ$ (115)	Air 2778. 813	A	5	1. 87	6. 32	$2\frac{1}{2} - 2\frac{1}{2}$	$b^4P - w^4P^\circ \dagger$ (128)
2360. 789	A	9	1. 04	6. 27	$2\frac{1}{2} - 2\frac{1}{2}$	$a^2F - 14^\circ$ (116)	2758. 538	A	2	1. 95	6. 42	$1\frac{1}{2} - 1\frac{1}{2}$	
2250. 496	A	10	0. 92	6. 40	$3\frac{1}{2} - 2\frac{1}{2}$	$a^2F - 16^\circ \dagger$ (117)	2791. 009	A	4	2. 00	6. 42	$0\frac{1}{2} - 1\frac{1}{2}$	
2184. 92	I	20£	0. 92	6. 57	$3\frac{1}{2} - 2\frac{1}{2}$	$a^2F - u^2D^\circ \dagger$ (118)	2920. 505	A	(4)	2. 03	6. 25	$4\frac{1}{2} - 4\frac{1}{2}$	$a^2G - w^2G^\circ \dagger$ (129)
2189. 33	I	12	0. 92	6. 56	$3\frac{1}{2} - 3\frac{1}{2}$	$a^2F - s^2F^\circ \dagger$ (119)	2995. 150	A	(4)	2. 13	6. 25	$3\frac{1}{2} - 3\frac{1}{2}$	
*2237. 125	A	25	1. 04	6. 56	$2\frac{1}{2} - 2\frac{1}{2}$		2903. 197	A	(3)	2. 03	6. 28	$4\frac{1}{2} - 4\frac{1}{2}$	$a^2G - x^2H^\circ$ (130)
2181. 12	I	25£	0. 92	6. 58	$3\frac{1}{2} - 4\frac{1}{2}$	$a^2F - v^2G^\circ$	2715. 987	A	(6)	2. 03	6. 58	$4\frac{1}{2} - 4\frac{1}{2}$	$a^2G - w^2G^\circ \dagger$ (131)
2225. 84	I	4	1. 04	6. 59	$2\frac{1}{2} - 3\frac{1}{2}$	(120)	2766. 215	A	(5)	2. 13	6. 59	$3\frac{1}{2} - 3\frac{1}{2}$	
2176. 48	I	10	0. 92	6. 59	$3\frac{1}{2} - 3\frac{1}{2}$		2396. 232	A	0	2. 03	7. 18	$4\frac{1}{2} -$	$a^2G - 36^\circ$ (132)
*2187. 28	I	25	1. 04	6. 69	$2\frac{1}{2} - 1\frac{1}{2}$	$a^2F - 23^\circ$ (121)	2441. 040	A	15	2. 13	7. 18	$3\frac{1}{2} -$	
Vac							2371. 458	A	12	2. 13	7. 33	$3\frac{1}{2} -$	$a^2G - 37^\circ$ (133)
1925. 05	I	12	0. 92	7. 33	$3\frac{1}{2} -$	$a^2F - 37^\circ$	2957. 672	A	3	2. 07	6. 24	$2\frac{1}{2} - 3\frac{1}{2}$	$a^2D - u^2F^\circ \dagger$ (134)
1963. 55	I	20	1. 04	7. 33	$2\frac{1}{2} -$	(122)	2919. 552	A	6	2. 03	6. 26	$1\frac{1}{2} - 2\frac{1}{2}$	
Air 2422. 568	A	10	1. 70	6. 80	$2\frac{1}{2} - 2\frac{1}{2}$	$a^4P - 27^\circ \dagger$ (123)	2943. 479	A	3	2. 07	6. 26	$2\frac{1}{2} - 3\frac{1}{2}$	$a^2D - s^2D^\circ \dagger$ (135)
2396. 588	A	6	1. 70	6. 85	$2\frac{1}{2} - 2\frac{1}{2}$	$a^4P - 30^\circ$	2883. 602	A	6	2. 03	6. 31	$1\frac{1}{2} - 2\frac{1}{2}$	
2410. 504	A	10	1. 73	6. 85	$1\frac{1}{2} - 2\frac{1}{2}$	(124)	2927. 667	A	(4)	2. 07	6. 29	$2\frac{1}{2} - 1\frac{1}{2}$	$a^2D - v^2P^\circ \dagger$ (136)
2378. 905	A	6	1. 70	6. 89	$2\frac{1}{2} - 1\frac{1}{2}$	$a^4P - 32^\circ$	2899. 819	A	(4)	2. 03	6. 29	$1\frac{1}{2} - 0\frac{1}{2}$	
2413. 580	A	6	1. 78	6. 89	$0\frac{1}{2} - 1\frac{1}{2}$	(125)	2837. 154	A	5	2. 07	6. 42	$2\frac{1}{2} - 1\frac{1}{2}$	$a^2D - w^2P^\circ \dagger$ (137)
2811. 508	A	4	1. 87	6. 26	$2\frac{1}{2} - 3\frac{1}{2}$	$b^4P - s^4D^\circ \dagger$ (126)	2785. 899	A	4	2. 03	6. 46	$1\frac{1}{2} - 0\frac{1}{2}$	
2826. 797	A	3	1. 95	6. 31	$1\frac{1}{2} - 2\frac{1}{2}$		2881. 867	A	5	2. 03	6. 32	$1\frac{1}{2} - 2\frac{1}{2}$	
2804. 098	A	2	2. 00	6. 40	$0\frac{1}{2} - 1\frac{1}{2}$		2752. 070	A	4	2. 03	6. 52	$1\frac{1}{2} - 2\frac{1}{2}$	$a^2D - t^2F^\circ$ (138)
2771. 697	A	2	2. 00	6. 45	$0\frac{1}{2} - 0\frac{1}{2}$		2775. 578	A	3	2. 07	6. 52	$2\frac{1}{2} - 2\frac{1}{2}$	
*2797. 081	A	5	1. 87	6. 29	$2\frac{1}{2} - 1\frac{1}{2}$	$b^4P - v^2P^\circ \dagger$ (127)	2772. 692	A	2	2. 03	6. 48	$1\frac{1}{2} -$	$a^2D - 20^\circ$ (139)
2842. 382	A	3	1. 95	6. 29	$1\frac{1}{2} - 0\frac{1}{2}$		2745. 098	A	6	2. 07	6. 57	$2\frac{1}{2} - 2\frac{1}{2}$	$a^2D - u^2D^\circ \dagger$ (140)
2878. 558	A	6	2. 00	6. 29	$0\frac{1}{2} - 1\frac{1}{2}$		2731. 112	A	5	2. 03	6. 55	$1\frac{1}{2} - 1\frac{1}{2}$	
							2722. 106	A	3	2. 03	6. 57	$1\frac{1}{2} - 2\frac{1}{2}$	
							2872. 19	P		2. 27	6. 57	$1\frac{1}{2} - 2\frac{1}{2}$	$a^2P - u^2D^\circ$ (141)
							2914. 608	A	7	2. 32	6. 55	$0\frac{1}{2} - 1\frac{1}{2}$	
							2882. 219	A	7	2. 27	6. 55	$1\frac{1}{2} - 1\frac{1}{2}$	

Strongest Unclassified Lines of Co I

Co II

I P 16.98 Anal B List B October 1951

REFERENCES

- A N. E. Hager, Jr., unpublished material (May 1951). W L, (I), (T)
 B J. H. Findlay, Phys. Rev. **36**, 5 (1930). W L, I, T
 C W. F. Meggers, see Reference B and unpublished material. W L, I, T
 H. N. Russell, J. Opt. Soc. Am. **40**, 619 (1950). I P

Co II

Coh

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air							Air						
2202. 928	A	100	0.00	5.60	4-4	$a^3F - z^3F^o$	2286. 165†	A	150	0.41	5.81	5-6	$a^3F - z^3G^o†$
2174. 539	A	50	0.00	5.68	4-3	(1)	*2307. 84	A	75	0.50	5.84	4-5	
2111. 470	A	50	0.00	5.84	4-5	$a^3F - z^3G^o†$	2311. 602	A	50	0.56	5.90	3-4	
2133. 498	A	10	0.12	5.90	3-4	(2)	2314. 036	A	40	0.61	5.94	2-3	
2058. 818	A	30	0.00	5.99	4-5	$a^3F - z^3G^o†$	2314. 97	A	30	0.64	5.97	1-2	
2065. 542	A	50	0.12	6.09	3-4	(3)	2272. 26	A	20	0.41	5.84	5-5	
2063. 790	A	35	0.20	6.18	2-3		2283. 534	A	20	0.50	5.90	4-4	
							2293. 415	A	30	0.56	5.94	3-3	
							2301. 419	A	15	0.61	5.97	2-2	
2011. 546	A	5	0.00	6.14	4-4	$a^3F - z^3F^o†$	2211. 411	A	30	0.41	5.99	5-5	$a^3F - z^3G^o†$
2022. 364	A	20	0.12	6.22	3-3	(4)	2205. 886	A	10	0.50	6.09	4-4	
2027. 047	A	20	0.20	6.29	2-2		2198. 279	A	20	0.56	6.18	3-3	
2000. 794	A	10	0.12	6.29	3-2		2173. 324	A	60	0.41	6.09	5-4	
2050. 75	B	10	0.12	6.14	3-4		2245. 11	A	100	0.50	5.99	4-5	
							2232. 05	A	50	0.56	6.09	3-4	
Vac													
1941. 28	B	50	0.00	6.36	4-3	$a^3F - z^3D^o†$	2156. 955	A	40	0.41	6.14	5-4	$a^3F - z^3F^o†$
1950. 098	A	20	0.12	6.45	3-2	(5)	*2156. 701	A	10	{ 0.50 0.56	6.22 6.29	4-3 3-2	
1957. 424	A	30	0.20	6.50	2-1								
1572. 645	A	(7)	0.00	7.85	4-3	$a^3F - y^3D^o†$	2188. 999	A	25	0.50	6.14	4-4	
1595. 773	A	(6)	0.12	7.85	3-2	(6)	2181. 729	A	10	0.56	6.22	3-3	
1605. 962	A	(5)	0.20	7.88	2-1		2214. 764	A	20	0.56	6.14	3-4	
							2200. 412	A	25	0.61	6.22	2-3	
							2187. 044	A	25	0.64	6.29	1-2	
Air							Vac						
2388. 930	A	100	0.41	5.58	5-5	$a^3F - z^3F^o$	1299. 574	A	(8)	0.41	9.91	5-4	$a^3F - x^3D^o†$
2417. 686	A	40	0.50	5.60	4-4	(7)	1306. 966	A	(8)	0.50	9.94	4-3	
2414. 069	A	40	0.56	5.68	3-3		1311. 856	A	(5)	0.56	9.97	3-2	
2408. 770	A	25	0.61	5.73	2-2		1315. 419	A	(4)	0.61	10.00	2-1	
2404. 187	A	20	0.64	5.78	1-1		1318. 180	A	(2)	0.64	10.01	1-0?	
2378. 636	A	100	0.41	5.60	5-4								
2383. 479	A	80	0.50	5.68	4-3								
2386. 376	A	50	0.56	5.73	3-2								
2389. 565	A	40	0.61	5.78	2-1								
2428. 310	A	10	0.50	5.58	4-5								
2449. 180	A	10	0.56	5.60	3-4								
2436. 991	A	10	0.61	5.68	2-3								
2423. 645	A	10	0.64	5.73	1-2								
Air							Air						
2663. 518	A	60					2663. 518	A	60	1.21	5.84	4-5	$b^3F - z^3G^o†$
2694. 701	A	25					2694. 701	A	25	1.32	5.90	3-4	
*2714. 470	A	15											
2580. 372	A	100					2580. 372	A	100	1.21	5.99	4-5	$b^3F - z^3G^o$
2587. 225	A	60					2587. 225	A	60	1.32	6.09	3-4	
2582. 247	A	50					2582. 247	A	50	1.40	6.18	2-3	
2528. 654	A	50					2528. 654	A	50	1.21	6.09	4-4	
2541. 977	A	50					2541. 977	A	50	1.32	6.18	3-3	
2485. 380	A	10					2485. 380	A	10	1.21	6.18	4-3	
2506. 474	A	70					2506. 474	A	70	1.21	6.14	4-4	$b^3F - z^3F^o$
2519. 829	A	60					2519. 829	A	60	1.32	6.22	3-3	
2525. 015	A	80					2525. 015	A	80	1.40	6.29	2-2	
2464. 210	A	35					2464. 210	A	35	1.21	6.22	4-3	
2486. 455	A	35					2486. 455	A	35	1.32	6.29	3-2	
2564. 050	A	75					2564. 050	A	75	1.32	6.14	3-4	
2559. 418	A	40					2559. 418	A	40	1.40	6.22	2-3	

Co II—Continued

Cou—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air							Vac						
2397. 423	A	60	1. 21	6. 36	4-3	b ⁴ F - z ³ D°†	1599. 308	A	(4)	2. 19	9. 91	3-4	a ⁴ P - z ³ D°†
2407. 680	A	20	1. 32	6. 45	3-2	(16)	1599. 701	A	(3)	2. 23	9. 94	2-3	(24)
2416. 922	A	30	1. 40	6. 50	2-1		1601. 282	A	(2)	2. 26	9. 97	1-2	
2450. 022	A	35	1. 32	6. 36	3-3								
2443. 804	A	40	1. 40	6. 45	2-2								
2613. 543	A	(20h)	1. 64	6. 36	2-3	a ⁴ P - z ³ D°	1486. 483	A	(9)	2. 19	10. 50	3-3	a ⁴ P - y ³ P°
2574. 908	A	(15h)	1. 65	6. 45	1-2	(17)	1475. 018	A	(2)	2. 26	10. 63	1-1	(25)
2557. 381	A	(12h)	1. 68	6. 50	0-1		1471. 860	A	(6)	2. 19	10. 58	3-2	
2565. 420	A	(10h)	1. 64	6. 45	2-2		1468. 356	A	(6)	2. 23	10. 63	2-1	
2545. 083	A	(10h)	1. 65	6. 50	1-1		1492. 254	A	(6)	2. 23	10. 50	2-3	
							1484. 251	A	(5)	2. 26	10. 58	1-2	
							Air						
							2605. 724	A	(20h)	2. 97	7. 71	2-1	b ⁴ P - z ³ S°
							2618. 908	A	(20h)	3. 00	7. 71	1-1	(26)
							2628. 834	A	(8h)	3. 01	7. 71	0-1	
2082. 692	A	(60)	1. 64	7. 56	2-2	a ⁴ P - y ³ D°†	2530. 102	A	(25h)	2. 97	7. 85	2-3	b ⁴ P - y ³ D°†
						(18)	2540. 650	A	(25h)	3. 00	7. 85	1-2	(27)
2032. 722	A	(10)	1. 64	7. 71	2-1	a ⁴ P - z ³ S°†	2533. 838	A	(25h)	3. 01	7. 88	0-1	
2038. 675	A	(9)	1. 65	7. 71	1-1	(19)	2528. 255	A	(8h)	2. 97	7. 85	2-2	
							2524. 664	A	(10h)	3. 00	7. 88	1-1	
2614. 372	A	20	2. 19	6. 91	3-2	a ⁴ P - z ³ S°							
2632. 259	A	30	2. 23	6. 91	2-2	(20)	2706. 769	A	50u	5. 81	10. 37	6-5	z ³ G° - e ³ F†
2653. 719	A	15	2. 28	6. 91	1-2		2684. 50	B	50u	5. 84	10. 44	5-4	(28)
							2676. 00	A	20u	5. 90	10. 51	4-3	
2291. 98	A	40	2. 19	7. 58	3-4	a ⁴ P - y ³ D°	2669. 919	A	10u	5. 94	10. 57	3-2	
2313. 617	A	8	2. 23	7. 56	2-3	(21)	2666. 82	B	5u	5. 97	10. 60	2-1	
2329. 130	A	10	2. 26	7. 56	1-2								
2299. 76	A	25	2. 19	7. 56	3-3								
2312. 561	A	10	2. 23	7. 56	2-2								
*2324. 317	A	40	2. 26	7. 57	1-1								
2298. 746	A	10	2. 19	7. 56	3-2								
*2307. 84	A	75	2. 23	7. 57	2-1								
2193. 605	A	100	2. 19	7. 82	3-3	a ⁴ P - z ³ P°							
2205. 060	A	20	2. 23	7. 82	2-2	(22)							
2205. 515	A	20	2. 26	7. 86	1-1								
2192. 492	A	50	2. 19	7. 82	3-2								
2190. 496	A	75	2. 23	7. 86	2-1								
2206. 215	A	75	2. 23	7. 82	2-3								
2220. 082	A	15	2. 26	7. 82	1-2								
2180. 614	A	20	2. 19	7. 85	3-2?	a ⁴ P - y ³ D°†	2943. 176	A	30u	6. 36	;	3-4	z ³ D° - e ³ F†
2207. 896	A	50	2. 26	7. 85	1-2?	(23)	2930. 484	A	10u	6. 45	;	2-3	(31)

Strongest Unclassified Lines of Co II

Co III

I P 33.41 Anal B List C December 1951

REFERENCE

A A. G. Shenstone, unpublished material (December 1951). W L, I, T, I P

Co III

Co III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
939.060	A	30	0.00	13.15	4½-3½	$a^4F - z^4D^\circ \dagger$	923.075	A	10	2.80	16.18	5½-5½	$a^2H - z^2H^\circ$
942.388	A	20	0.10	13.20	3½-2½	(1)	925.045	A	8	2.89	16.24	4½-4½	(14)
944.768	A	20	0.18	13.25	2½-1½		893.045	A	15	2.80	16.63	5½-5½	$a^2H - y^2H^\circ$
946.594	A	20	0.23	13.27	1½-0½		893.095	A	8	2.89	16.72	4½-4½	(15)
936.639	A	30	0.00	13.18	4½-4½	$a^4F - z^4F^\circ \dagger$	870.007	A	15	2.80	16.99	5½-4½	$a^2H - x^2G^\circ$
937.310	A	20	0.10	13.27	3½-3½	(2)	874.294	A	10	2.89	17.01	4½-3½	(16)
938.077	A	10	0.18	13.34	2½-2½								
938.647	A	5	0.23	13.38	1½-1½		858.975	A	15	2.80	17.18	5½-5½	$a^2H - x^2H^\circ$
801.493	A	30	0.00	15.40	4½-5½	$a^4F - z^4G^\circ \dagger$	865.898	A	0	2.89	17.15	4½-4½	(17)
805.345	A	20	0.10	15.43	3½-4½	(3)	844.097	A	20	2.80	17.43	5½-5½	$a^2H - w^2H^\circ \dagger$
807.910	A	15	0.18	15.46	2½-3½		848.088	A	30	2.89	17.45	4½-4½	(18)
809.706	A	15	0.23	15.48	1½-2½								
790.197	A	50	0.00	15.62	4½-3½	$a^4F - y^4D^\circ \dagger$	839.284	A	30	2.80	17.51	5½-6½	$a^2H - y^2I^\circ$
785.883	A	15	0.10	15.81	3½-2½	(4)	844.310	A	8	2.89	17.51	4½-5½	(19)
787.562	A	8	0.18	15.85	2½-1½								
789.447	A	30	0.23	15.87	1½-0½?								
771.868	A	20	0.00	15.99	4½-5½	$a^4F - y^4G^\circ \dagger$	1928.570	A	500	5.73	12.13	4½-4½	$a^6D - z^6D^\circ$
776.688	A	20	0.10	16.00	3½-4½	(5)	1940.147	A	500	5.80	12.17	3½-3½	(20)
779.683	A	20	0.18	16.01	2½-3½		1945.234	A	200	5.85	12.20	2½-2½	
781.983	A	15	0.23	16.02	1½-2½		1947.626	A	5	5.89	12.23	1½-1½	
*762.775	A	50	0.00	16.18	4½-5½	$a^4F - x^4G^\circ \dagger$	1948.655	A	100	5.91	12.24	0½-0½	
767.703	A	15	0.10	16.18	3½-4½	(6)	1919.120	A	500	5.73	12.17	4½-3½	
768.458	A	15	0.18	16.24	2½-3½		1929.756	A	300	5.80	12.20	3½-2½	
769.128	A	10	0.23	16.28	1½-2½		1936.933	A	300	5.85	12.23	2½-1½	
*762.775	A	50	0.00	16.18	4½-4½		1942.369	A	200	5.89	12.24	1½-0½	
764.866	A	15	0.10	16.24	3½-3½		1949.805	A	200	5.80	12.13	3½-4½	
766.667	A	10h	0.18	16.28	2½-2½		1955.793	A	200	5.85	12.17	2½-3½	
766.667	A	10h	0.18	16.28	2½-2½		1956.011	A	200	5.89	12.20	1½-2½	
758.212	A	20	0.00	16.28	4½-4½	$a^4F - x^4F^\circ \dagger$	1953.942	A	500	5.91	12.23	0½-1½	
760.825	A	30	0.10	16.33	3½-3½	(7)							
763.131	A	25	0.18	16.36	2½-2½		1760.354	A	5000	5.73	12.75	4½-5½	$a^6D - z^6F^\circ$
764.959	A	20	0.23	16.37	1½-1½		1773.568	A	5000	5.80	12.76	3½-4½	(21)
1095.443	A	15	1.88	13.15	2½-3½	$z^4P - z^4D^\circ \dagger$	1782.966	A	2000	5.85	12.78	2½-3½	
1092.581	A	10	1.90	13.20	1½-2½	(8)	1789.070	A	1000	5.89	12.79	1½-2½	
1093.066	A	5	1.95	13.25	0½-1½		1792.410	A	300	5.91	12.80	0½-1½	
878.543	A	10	2.10	16.15	4½-4½	$z^2G - y^2G^\circ$	1755.979	A	500	5.73	12.76	4½-4½	
880.950	A	10	2.19	16.21	3½-3½	(9)	1769.957	A	500	5.80	12.78	3½-3½	
838.133	A	25	2.10	16.83	4½-3½	$z^2G - y^2F^\circ$	1780.046	A	2000	5.85	12.79	2½-2½	
844.866	A	10	2.19	16.81	3½-2½	(10)	1787.082	A	1000	5.89	12.80	1½-1½	
818.600	A	20	2.10	17.18	4½-5½	$a^2G - x^2H^\circ \dagger$	1791.277	A	500	5.91	12.80	0½-0½	
825.403	A	15	2.19	17.15	3½-4½	(11)	1767.084	A	30	5.80	12.79	3½-2½	
810.502	A	15	2.10	17.33	4½-4½	$a^2G - w^2G^\circ$	1778.091	A	100	5.85	12.80	2½-1½	
815.555	A	25	2.19	17.33	3½-3½	(12)	1785.965	A	50	5.89	12.80	1½-0½	
808.612	A	5	2.10	17.36	4½-3½	$a^2G - x^2F^\circ$	1707.348	A	1000	5.73	12.96	4½-3½	$a^6D - z^6P^\circ$
812.869	A	10	2.19	17.38	3½-2½	(13)	1696.008	A	1000	5.80	13.08	3½-2½	(22)
							1689.858	A	100	5.85	13.16	2½-1½	
							1723.970	A	500	5.80	12.96	3½-3½	
							1707.951	A	500	5.85	13.08	2½-2½	
							1697.988	A	800	5.89	13.16	1½-1½	
							1736.312	A	200	5.85	12.96	2½-3½	
							1716.251	A	200	5.89	13.08	1½-2½	
							1702.790	A	500	5.91	13.16	0½-1½	

Co III—Continued

Co III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1665. 269	A	50	5. 73	13. 15	$4\frac{1}{2}-3\frac{1}{2}$	$a^4D-z^4D^\circ$ (23)	1819. 261	A	30	8. 90	15. 68	$4\frac{1}{2}-4\frac{1}{2}$	$a^4H-z^2G^\circ\dagger$ (33)
1668. 032	A	5	5. 80	13. 20	$3\frac{1}{2}-2\frac{1}{2}$		1816. 617	A	20	8. 92	15. 72	$3\frac{1}{2}-3\frac{1}{2}$	
1681. 074	A	10	5. 80	13. 15	$3\frac{1}{2}-3\frac{1}{2}$		1825. 464	A	100	8. 92	15. 68	$3\frac{1}{2}-4\frac{1}{2}$	
1679. 578	A	20	5. 85	13. 20	$2\frac{1}{2}-2\frac{1}{2}$		1792. 144	A	100	8. 87	15. 76	$5\frac{1}{2}-6\frac{1}{2}$	$a^4H-z^2I^\circ$ (34)
1677. 901	A	15	5. 89	13. 25	$1\frac{1}{2}-1\frac{1}{2}$								
1970. 054	A	300	6. 88	13. 15	$3\frac{1}{2}-3\frac{1}{2}$	$a^4D-z^4D^\circ$ (24)	1726. 134	A	100	8. 84	15. 99	$6\frac{1}{2}-5\frac{1}{2}$	$a^4H-y^4G^\circ\dagger$ (35)
1977. 031	A	200	6. 96	13. 20	$2\frac{1}{2}-2\frac{1}{2}$		1732. 545	A	200	8. 87	16. 00	$5\frac{1}{2}-4\frac{1}{2}$	
1980. 113	A	200	7. 01	13. 25	$1\frac{1}{2}-1\frac{1}{2}$		1735. 400	A	50	8. 90	16. 01	$4\frac{1}{2}-3\frac{1}{2}$	
1981. 345	A	100	7. 04	13. 27	$0\frac{1}{2}-0\frac{1}{2}$		1739. 833	A	30	8. 92	16. 02	$3\frac{1}{2}-2\frac{1}{2}$	
1952. 158	A	200	6. 88	13. 20	$3\frac{1}{2}-2\frac{1}{2}$		1645. 986	A	30	8. 84	16. 34	$6\frac{1}{2}-6\frac{1}{2}$	$a^4H-y^4H^\circ\dagger$ (36)
1963. 743	A	100	6. 96	13. 25	$2\frac{1}{2}-1\frac{1}{2}$		1649. 265	A	200?	8. 87	16. 36	$5\frac{1}{2}-5\frac{1}{2}$	
1971. 889	A	100	7. 01	13. 27	$1\frac{1}{2}-0\frac{1}{2}$		*1652. 791	A	10	8. 90	16. 37	$4\frac{1}{2}-4\frac{1}{2}$	
1995. 397	A	50	6. 96	13. 15	$2\frac{1}{2}-3\frac{1}{2}$								
1993. 625	A	100	7. 01	13. 20	$1\frac{1}{2}-2\frac{1}{2}$								
*1989. 645	A	100	7. 04	13. 25	$0\frac{1}{2}-1\frac{1}{2}$								
1959. 414	A	500	6. 88	13. 18	$3\frac{1}{2}-4\frac{1}{2}$	$a^4D-z^4F^\circ\dagger$ (25)	3010. 921	A	20	9. 05	13. 15	$4\frac{1}{2}-3\frac{1}{2}$	$b^4F-z^4D^\circ$ (37)
1954. 791	A	300	6. 96	13. 27	$2\frac{1}{2}-3\frac{1}{2}$		2991. 915	A	20	9. 08	13. 20	$3\frac{1}{2}-2\frac{1}{2}$	
1950. 911	A	400	7. 01	13. 34	$1\frac{1}{2}-2\frac{1}{2}$		2978. 028	A	10	9. 10	13. 25	$2\frac{1}{2}-1\frac{1}{2}$	
1946. 792	A	300	7. 04	13. 38	$0\frac{1}{2}-1\frac{1}{2}$		2971. 350	A	5	9. 12	13. 27	$1\frac{1}{2}-0\frac{1}{2}$	
1930. 479	A	50	6. 88	13. 27	$3\frac{1}{2}-3\frac{1}{2}$								
1935. 023	A	100	6. 96	13. 34	$2\frac{1}{2}-2\frac{1}{2}$								
1937. 661	A	100	7. 01	13. 38	$1\frac{1}{2}-1\frac{1}{2}$								
1830. 093	A	1000	6. 88	13. 63	$3\frac{1}{2}-2\frac{1}{2}$	$a^4D-z^4P^\circ$ (26)	1942. 497	A	100	9. 05	15. 40	$4\frac{1}{2}-5\frac{1}{2}$	$b^4F-z^4G^\circ$ (38)
1831. 916	A	500	6. 96	13. 70	$2\frac{1}{2}-1\frac{1}{2}$		1942. 796	A	100	9. 08	15. 43	$3\frac{1}{2}-4\frac{1}{2}$	
1835. 255	A	100	7. 01	13. 74	$1\frac{1}{2}-0\frac{1}{2}$		1941. 730	A	100	9. 10	15. 46	$2\frac{1}{2}-3\frac{1}{2}$	
1851. 937	A	200	6. 96	13. 63	$2\frac{1}{2}-2\frac{1}{2}$		1941. 460	A	50	9. 12	15. 48	$1\frac{1}{2}-2\frac{1}{2}$	
1846. 157	A	300	7. 01	13. 70	$1\frac{1}{2}-1\frac{1}{2}$		1933. 250	A	50	9. 05	15. 43	$4\frac{1}{2}-4\frac{1}{2}$	
1843. 443	A	100	7. 04	13. 74	$0\frac{1}{2}-0\frac{1}{2}$		1934. 734	A	50	9. 08	15. 46	$3\frac{1}{2}-3\frac{1}{2}$	
1866. 497	A	20	7. 01	13. 63	$1\frac{1}{2}-2\frac{1}{2}$		1936. 392	A	20	9. 10	15. 48	$2\frac{1}{2}-2\frac{1}{2}$	
1854. 393	A	400?	7. 04	13. 70	$0\frac{1}{2}-1\frac{1}{2}$		1925. 260	A	20h	9. 05	15. 46	$4\frac{1}{2}-3\frac{1}{2}$	
Air							1877. 464	A	50	9. 05	15. 62	$4\frac{1}{2}-3\frac{1}{2}$	$b^4F-y^4D^\circ\dagger$ (39)
2811. 750	A	20	8. 76	13. 15	$2\frac{1}{2}-3\frac{1}{2}$	$b^4P-z^4D^\circ\dagger$ (27)	*1886. 469	A	50	9. 08	15. 62	$3\frac{1}{2}-3\frac{1}{2}$	
2888. 313	A	10	8. 93	13. 20	$1\frac{1}{2}-2\frac{1}{2}$		1839. 636	A	20	9. 10	15. 81	$2\frac{1}{2}-2\frac{1}{2}$	
2933. 292	A	5	9. 04	13. 25	$0\frac{1}{2}-1\frac{1}{2}$								
Vac													
1798. 064	A	500	8. 76	15. 62	$2\frac{1}{2}-3\frac{1}{2}$	$b^4P-y^4D^\circ\dagger$ (28)	1861. 775	A	1000	9. 05	15. 68	$4\frac{1}{2}-4\frac{1}{2}$	$b^4F-y^4F^\circ$ (40)
1793. 924	A	200	8. 93	15. 81	$1\frac{1}{2}-2\frac{1}{2}$		1874. 355	A	100	9. 08	15. 66	$3\frac{1}{2}-3\frac{1}{2}$	
1811. 317	A	100	9. 04	15. 85	$0\frac{1}{2}-1\frac{1}{2}$		*1881. 702	A	1000	9. 10	15. 66	$2\frac{1}{2}-2\frac{1}{2}$	
1751. 854	A	200	8. 76	15. 80	$2\frac{1}{2}-3\frac{1}{2}$	$b^4P-x^4D^\circ\dagger$ (29)	1882. 323	A	150	9. 12	15. 68	$1\frac{1}{2}-1\frac{1}{2}$	
*1881. 702	A	1000	8. 84	15. 40	$6\frac{1}{2}-5\frac{1}{2}$	$a^4H-z^4G^\circ\dagger$ (30)	1865. 456	A	100	9. 05	15. 66	$4\frac{1}{2}-3\frac{1}{2}$	
1881. 867	A	300	8. 87	15. 43	$5\frac{1}{2}-4\frac{1}{2}$		1875. 094	A	200	9. 08	15. 66	$3\frac{1}{2}-2\frac{1}{2}$	
*1881. 702	A	1000	8. 90	15. 46	$4\frac{1}{2}-3\frac{1}{2}$		1877. 544	A	50	9. 10	15. 68	$2\frac{1}{2}-1\frac{1}{2}$	
1883. 286	A	200	8. 92	15. 48	$3\frac{1}{2}-2\frac{1}{2}$		1870. 634	A	75	9. 08	15. 68	$3\frac{1}{2}-4\frac{1}{2}$	
1863. 826	A	2000	8. 84	15. 47	$6\frac{1}{2}-6\frac{1}{2}$	$a^4H-z^4H^\circ$ (31)	1880. 912	A	50	9. 10	15. 66	$2\frac{1}{2}-3\frac{1}{2}$	
1871. 870	A	500	8. 87	15. 47	$5\frac{1}{2}-5\frac{1}{2}$		*1886. 469	A	50	9. 12	15. 66	$1\frac{1}{2}-2\frac{1}{2}$	
1874. 822	A	300	8. 90	15. 48	$4\frac{1}{2}-4\frac{1}{2}$		1827. 094	A	400	9. 05	15. 80	$4\frac{1}{2}-3\frac{1}{2}$	$b^4F-z^4D^\circ\dagger$ (42)
1871. 952	A	300	8. 92	15. 52	$3\frac{1}{2}-3\frac{1}{2}$		1818. 684	A	200	9. 08	15. 87	$3\frac{1}{2}-2\frac{1}{2}$	
1863. 134	A	5	8. 84	15. 47	$6\frac{1}{2}-5\frac{1}{2}$		1815. 596	A	200	9. 10	15. 90	$2\frac{1}{2}-1\frac{1}{2}$	
1867. 490	A	100	8. 87	15. 48	$5\frac{1}{2}-4\frac{1}{2}$		1815. 686	A	200	9. 12	15. 92	$1\frac{1}{2}-0\frac{1}{2}$	
1865. 424	A	100	8. 90	15. 52	$4\frac{1}{2}-3\frac{1}{2}$		1835. 617	A	100	9. 08	15. 80	$3\frac{1}{2}-3\frac{1}{2}$	
1872. 575	A	300	8. 87	15. 47	$5\frac{1}{2}-6\frac{1}{2}$		1824. 874	A	100	9. 10	15. 87	$2\frac{1}{2}-2\frac{1}{2}$	
1879. 244	A	300	8. 90	15. 47	$4\frac{1}{2}-5\frac{1}{2}$		1820. 064	A	100	9. 12	15. 90	$1\frac{1}{2}-1\frac{1}{2}$	
1881. 427	A	150	8. 92	15. 48	$3\frac{1}{2}-4\frac{1}{2}$								
1835. 000	A	2000	8. 84	15. 57	$6\frac{1}{2}-7\frac{1}{2}$	$a^4H-z^4I^\circ\dagger$ (32)	1777. 145	A	1000	9. 05	15. 99	$4\frac{1}{2}-5\frac{1}{2}$	$b^4F-y^4G^\circ$ (43)
1831. 439	A	1000	8. 87	15. 61	$5\frac{1}{2}-6\frac{1}{2}$		1784. 055	A	500	9. 08	16. 00	$3\frac{1}{2}-4\frac{1}{2}$	
1837. 630	A	500	8. 90	15. 62	$4\frac{1}{2}-5\frac{1}{2}$		1786. 342	A	200	9. 10	16. 01	$2\frac{1}{2}-3\frac{1}{2}$	
1852. 645	A	15d	8. 92	15. 58	$3\frac{1}{2}-4\frac{1}{2}$		1789. 373	A	100	9. 12	16. 02	$1\frac{1}{2}-2\frac{1}{2}$	
1823. 079	A	1000	8. 84	15. 61	$6\frac{1}{2}-6\frac{1}{2}$								
1830. 581	A	300	8. 87	15. 62	$5\frac{1}{2}-5\frac{1}{2}$								
1846. 514	A	100	8. 90	15. 58	$4\frac{1}{2}-4\frac{1}{2}$								
Air							3305. 370	A	20	9. 45	13. 18	$5\frac{1}{2}-4\frac{1}{2}$	$a^4G-z^4F^\circ$ (44)
							3287. 630	A	20	9. 52	13. 27	$4\frac{1}{2}-3\frac{1}{2}$	
							3259. 676	A	20	9. 55	13. 34	$3\frac{1}{2}-2\frac{1}{2}$	
							3232. 726	A	10	9. 56	13. 38	$2\frac{1}{2}-1\frac{1}{2}$	

Co III—Continued

Co III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1978. 948	A	50	9. 45	15. 68	5½-4½	a ⁴G -z ²G°	Vac						
1992. 158	A	10	9. 52	15. 72	4½-3½	(45)	1927. 740	A	200	9. 74	16. 15	3½-4½	a ²F -y ²G°†
1954. 876	A	100	9. 45	15. 76	5½-6½	a ⁴G -z ²I°	1928. 490	A	100	9. 81	16. 21	2½-3½	
1955. 505	A	30	9. 52	15. 83	4½-5½	(46)	1900. 763	A	50	9. 74	16. 24	3½-4½	a ²F -z ²H°
*1832. 201	A	200	9. 45	16. 18	5½-5½	a ⁴G -z ²G°							
1845. 074	A	100	9. 55	16. 24	3½-3½	(47)	1743. 311	A	30	9. 74	16. 83	3½-3½	a ²F -y ²F°
1837. 840	A	100	9. 56	16. 28	2½-2½		1763. 533	A	15	9. 81	16. 81	2½-2½	(63)
*1832. 201	A	200	9. 45	16. 18	5½-4½								
1836. 200	A	200	9. 52	16. 24	4½-3½								
1834. 840	A	50	9. 55	16. 28	3½-2½								
1806. 096	A	10	9. 45	16. 28	5½-4½	a ⁴G -x ⁴F°	Air						
1813. 044	A	50	9. 52	16. 33	4½-3½	(48)	2090. 50	A	10	10. 17	16. 07	4½-3½	b ²G -z ²F°
1814. 683	A	100	9. 55	16. 36	3½-2½		2105. 17	A	3	10. 24	16. 10	3½-2½	(64)
1814. 219	A	100	9. 56	16. 37	2½-1½		2053. 108	A	200	10. 17	16. 18	4½-5½	b ²G -z ²H°
1825. 947	A	400	9. 52	16. 28	4½-4½		2056. 148	A	100	10. 24	16. 24	3½-4½	(65)
1821. 688	A	300	9. 55	16. 33	3½-3½								
1817. 626	A	100	9. 56	16. 36	2½-2½								
1790. 258	A	500	9. 45	16. 34	5½-6½	a ⁴G -y ⁴H°†	Vac						
1805. 535	A	500	9. 52	16. 36	4½-5½	(49)	1910. 840	A	300	10. 17	16. 63	4½-5½	b ²G -y ²H°
1811. 466	A	400	9. 55	16. 37	3½-4½		1905. 354	A	300	10. 24	16. 72	3½-4½	(66)
1813. 186	A	300	9. 56	16. 37	2½-3½								
Air							*1854. 393	A	400	10. 17	16. 83	4½-3½	b ²G -y ²F°
2013. 881	A	200	9. 56	15. 68	5½-4½	b ²H -z ²G°	1879. 385	A	200	10. 24	16. 81	3½-2½	(67)
2011. 613	A	200	9. 58	15. 72	4½-3½	(50)	1808. 384	A	300	10. 17	16. 99	4½-4½	b ²G -z ²G°
Vac							1821. 766	A	300	10. 24	17. 01	3½-3½	(68)
*1989. 645	A	100	9. 56	15. 76	5½-6½	b ²H -z ²I°†	Air						
1974. 883	A	200	9. 58	15. 83	4½-5½	(51)	2193. 25	A	8	10. 55	16. 18	6½-5½	a ²I -z ²H°
1873. 014	A	1	9. 56	16. 15	5½-4½	b ²H -y ²G°	2172. 26	A	5	10. 56	16. 24	5½-4½	(70)
1880. 449	A	30	9. 58	16. 15	4½-4½	(52)							
1864. 187	A	400	9. 56	16. 18	5½-5½	b ²H -z ²H°	Vac						
1854. 763	A	300	9. 58	16. 24	4½-4½	(53)	1863. 467	A	200	10. 55	17. 18	6½+5½	a ²I -x ²H°
*1862. 660	A	100	9. 56	16. 18	5½-5½	b ²H -z ²G°	1872. 532	A	200	10. 56	17. 15	5½-4½	(71)
1870. 012	A	30	9. 58	16. 18	4½-4½	(54)	1794. 804	A	100	10. 55	17. 43	6½-5½	a ²I -w ²H°
*1862. 660	A	100	9. 56	16. 18	5½-4½		1791. 153	A	300	10. 56	17. 45	5½-4½	(72)
1853. 266	A	20d	9. 58	16. 24	4½-3½		1796. 200	A	10	10. 56	17. 43	5½-5½	
1835. 687	A	20?	9. 56	16. 28	5½-4½	b ²H -z ²F°	1773. 215	A	500	10. 55	17. 51	6½-6½	a ²I -y ²I°
1829. 674	A	300	9. 58	16. 33	4½-3½	(55)	1774. 318	A	500	10. 56	17. 51	5½-5½	(73)
1819. 330	A	200	9. 56	16. 34	5½-6½	b ²H -y ⁴H°	1779. 577	A	10	10. 56	17. 51	5½-6½	
1822. 046	A	200	9. 58	16. 36	4½-5½	(56)	Air						
1815. 063	A	20	9. 56	16. 36	5½-5½		2452. 16	A	10	10. 65	15. 68	4½-4½	c ²G -z ²G°
1745. 674	A	400	9. 56	16. 63	5½-5½	b ²H -y ²H°	2438. 76	A	3	10. 66	15. 72	3½-3½	(74)
1730. 670	A	250	9. 58	16. 72	4½-4½	(57)							
1659. 757	A	10	9. 56	16. 99	5½-4½	b ²H -z ²G°	Vac						
1661. 422	A	10	9. 58	17. 01	4½-3½	(58)	1892. 011	A	150	10. 65	17. 18	4½-5½	c ²G -x ²H°
1588. 642	A	10	9. 56	17. 33	5½-4½	b ²H -z ²G°	1901. 357	A	300	10. 66	17. 15	3½-4½	(75)
1593. 372	P		9. 58	17. 33	4½-3½	(59)	1899. 795	A	50	10. 65	17. 15	4½-4½	
1950. 961	A	50	9. 74	16. 07	3½-3½	a ²F -z ²F°	1849. 299	A	200	10. 65	17. 33	4½-4½	c ²G -w ²G°
1961. 450	A	50	9. 81	16. 10	2½-2½	(60)	1849. 932	A	200	10. 66	17. 33	3½-3½	(76)
							*1850. 780	A	20	10. 66	17. 33	3½-4½	
							1839. 535	A	50	10. 65	17. 36	4½-3½	c ²G -x ²F°
							*1836. 200	A	200	10. 66	17. 38	3½-2½	(77)
							1821. 232	A	400	10. 65	17. 43	4½-5½	c ²G -w ²H°†
							1817. 518	A	100	10. 66	17. 45	3½-4½	(78)

Strongest Unclassified Lines of Co III

Vac	A	500					Vac	A	300			
1895. 368	A	200					1847. 825	A	200			
1886. 742	A	300					1847. 300	A	200			

NICKEL, Z=28

Ni I

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Ni I

Ni I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2805. 078	A	(3)	0.00	4.40	4-3	$a^3F - y^1F^\circ$ (1)	2310. 952	A	100	0.00	5.34	4-4	$a^3F - w^3F^\circ$ (10)
2914. 006	A	(2)	0.16	4.40	3-3		2312. 335	A	50	0.16	5.50	3-3	
*2991. 106	A	4	0.27	4.40	2-3		2313. 976	A	100	0.27	5.61	2-2	
							2243. 22	C	(tr)	0.00	5.50	4-3	
2834. 547	A	(3)	0.16	4.52	3-2	$a^3F - y^1D^\circ$ (2)	2267. 554	A	2	0.16	5.61	3-2	
2907. 457	A	(3)	0.27	4.52	2-2		2384. 390	A	6	0.16	5.34	3-4	
							2360. 633	A	10	0.27	5.50	2-3	
2476. 875	A	3	0.00	4.98	4-3	$a^3F - 1^\circ$ (3)	2423. 653	A	4	0.27	5.37	2-1	$a^3F - y^1P^\circ$ (11)
2561. 424	A	(1)	0.16	4.98	3-3								
2553. 373	A	(1)	0.16	5.00	3-2	$a^3F - 2^\circ$ (4)	2346. 628	A	4	0.16	5.42	3-2	$a^3F - z^1D^\circ$ (12)
							2396. 378	A	3	0.27	5.42	2-2	
2347. 507	A	15	0.00	5.26	4-4	$a^3F - x^3F^\circ$ (5)	2261. 424	A	10	0.00	5.46	4-3	$a^3F - x^1F^\circ$ (13)
2362. 070	A	10	0.16	5.39	3-3		2331. 698	A	2	0.16	5.46	3-3	
2289. 982	A	20	0.00	5.39	4-3		2380. 812	A	2	0.27	5.46	2-3	
2423. 322	A	4	0.16	5.26	3-4								
2345. 539	A	30	0.00	5.26	4-3	$a^3F - x^3D^\circ$ (6)	2254. 810	A	8	0.00	5.47	4-	$a^3F - 3^\circ$ (14)
2401. 839	A	20	0.16	5.30	3-2		2324. 645	A	(2)	0.16	5.47	3-	
2421. 223	A	7	0.16	5.26	3-3								
2453. 984	A	4	0.27	5.30	2-2		2212. 149	A	2	0.16	5.74	3-2	$a^3F - z^3P^\circ$
							2221. 939	A	5	0.27	5.83	2-1	(15)
2419. 310	A	20	0.16	5.27	3-2	$a^3F - y^3P^\circ$ (7)	2125. 62	C	5	0.00	5.81	4-3	$a^3F - v^1D^\circ$ (16)
2472. 065	A	6	0.27	5.27	2-1		2182. 38	C	7	0.16	5.82	3-2	
2472. 224	A	(1)	0.27	5.27	2-2		2211. 292	A	2	0.27	5.85	2-1	
							2187. 60	C	(1)	0.16	5.81	3-3	
2337. 484	A	50	0.00	5.28	4-3	$a^3F - w^3D^\circ \dagger$ (8)	2225. 35	C	(1)	0.27	5.82	2-2	
2317. 159	A	50	0.16	5.49	3-2								
2329. 963	A	50	0.27	5.57	2-1		2052. 04	C	(12)	0.00	6.01	4-4	$a^3F - v^3F^\circ$ (17)
2412. 640	A	10	0.16	5.28	3-3		2111. 73	C	(5)	0.16	6.01	3-3	
2365. 657	A	(1)	0.27	5.49	2-2		2090. 42	C	(2)	0.27	6.18	2-2	
2465. 263	A	2	0.27	5.28	2-3		2053. 91	C	(1)	0.00	6.01	4-3	
							2052. 45	C	(2)	0.16	6.18	3-2	
2320. 026	A	100	0.00	5.32	4-5	$a^3F - y^3G^\circ \dagger$ (9)	2109. 79	C	(2)	0.16	6.01	3-4	
2325. 794	A	50	0.16	5.47	3-4		2151. 93	C	3	0.27	6.01	2-3	
2321. 377	A	60	0.27	5.59	2-3								
2255. 873	A	(2)	0.00	5.47	4-4		2095. 75	C	(4)	0.16	6.05	3-3	$a^3F - 6^\circ \dagger$ (18)
2274. 662	A	(1u)	0.16	5.59	3-3		2135. 34	C	(3)	0.27	6.05	2-3	

Ni I—Continued

Ni I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2026. 62 2089. 09 2055. 50 2082. 87 2128. 41	C C C C C	(20) (4) (15) (8) 3	0.00 0.16 0.27 0.16 0.27	6.09 6.07 6.28 6.09 6.07	4-3 3-2 2-1 3-3 2-2	$a^3F - u^3D^o$ (19)	Air 2321. 953 2288. 396 2287. 315 2253. 565 2244. 464 2211. 03	A 4 (1) (1) (1) (3)	(1) 4 3 3 1 0.03 0.11 0.21 0.03 0.11 0.03	5.34 5.50 5.61 5.50 5.61 5.61	3-4 2-3 1-2 3-3 2-2 3-2	$a^3D - w^3F^o$ (34)	
Vac 1994. 29	C	(2)	0.00	6.19	4-3	$a^3F - w^3F^o$ (20)	2271. 951 2307. 351	A A	6 3	0.03 0.11	5.46 5.46	3-3 2-3	$a^3D - x^3F^o$ (35)
Air 2072. 26	C	(3)	0.27	6.23	2-1	$a^3F - x^3P^o$ (21)	2158. 31 2174. 480 2190. 223 2197. 347 2230. 955	C A A A A	30 10 15 20 3	0.03 0.11 0.11 0.21 0.21	5.74 5.83 5.74 5.83 5.74	3-2 2-1 2-2 1-1 1-2	$a^3D - x^3P^o$ (36)
Vac 1968. 90	C	(1)	0.00	6.27	4-4	$a^3F - u^3F^o \dagger$ (23)	2134. 93 2161. 04 2186. 94 2129. 96 2147. 80 2166. 15	C C C C C C	20 6 (2) 10 40 5	0.03 0.11 0.21 0.03 0.11 0.11	5.81 5.82 5.85 5.82 5.85 5.81	3-3 2-2 1-1 3-2 2-1 2-3	$a^3D - v^3D^o$ (37)
Air 2007. 69 2034. 90	C C	(4) (5)	0.16 0.27	6.31 6.34	3-3 2-2		2121. 40 2152. 23	C C	(8) (3)	0.03 0.11	5.84 5.84	3-2 2-2	$a^3D - 4^o \dagger$ (38)
3002. 484 3003. 622 3057. 638 2943. 912 2981. 645 3064. 619 3080. 754	A	100R 60R 50R 25 20R 25R 20R	0.03 0.11 0.21 0.03 0.11 0.21	4.14 4.22 4.25 4.22 4.25 4.14 4.22	3-3 2-2 1-1 3-2 2-1 2-3 1-2	$a^3D - y^3D^o$ (24)	2220. 71	C	4	0.21	5.82	1-2	
2821. 291 2876. 090	A	15 (2)	0.03 0.11	4.40 4.40	3-3 2-3	$a^3D - y^3F^o$ (25)	2060. 76 2091. 69 2068. 62 2033. 56	C C C C	(1) (0) (4) (2?)	0.03 0.11 0.21 0.11	6.01 6.01 6.18 6.18	3-4 2-3 1-2 2-2	$a^3D - v^3F^o$ (39)
2746. 743 2798. 651 2865. 498	A	5 10 1	0.03 0.11 0.21	4.52 4.52 4.52	3-2 2-2 1-2	$a^3D - y^3D^o$ (26)	2059. 92 2060. 20 2064. 39 2088. 98	C C C C	(12) (8) (8) (4)	0.03 0.11 0.21 0.11	6.02 6.10 6.19 6.02	3-2 2-1 1-0 2-2	$a^3D - w^3P^o$ (40)
2489. 507 2532. 076	A	(1) (1)	0.03 0.11	4.98 4.98	3-3 2-3	$a^3D - l^o$ (27)	2085. 37 2122. 25	C C	(4) (1)	0.11 0.21	6.03 6.03	2- 1-	$a^3D - 5^o$ (41)
2524. 208 2578. 465	A	5 (1)	0.11 0.21	5.00 5.00	2-2 1-2	$a^3D - 2^o$ (28)	2047. 35 2076. 07	C C	(10) (2)	0.03 0.11	6.05 6.05	3-3 2-3	$a^3D - 6^o$ (42)
2358. 853 2337. 087 2300. 774	A	8 (1) 20	0.03 0.11 0.03	5.26 5.39 5.39	3-4 2-3 3-3	$a^3D - x^3F^o$ (29)	2035. 07 2069. 52 2034. 44 2000. 49 2063. 42 2105. 85	C C C C C C	(20) (8) (10) (1) (10) (1)	0.03 0.11 0.21 0.11 0.11 0.21	6.09 6.07 6.28 6.28 6.09 6.07	3-3 2-2 1-1 2-1 2-3 1-2	$a^3D - u^3D^o$ (43)
2356. 864 2376. 016 2338. 493 2424. 027	A	10 7 2 5	0.03 0.11 0.03 0.21	5.26 5.30 5.30 5.30	3-3 2-2 3-2 1-2	$a^3D - x^3D^o$ (30)	2001. 83 2029. 29	C C	(4) (3)	0.03 0.11	6.19 6.19	3-3 2-3	$a^3D - w^3F^o$ (44)
2355. 050 2392. 961 2393. 109 2441. 665 2441. 817	A	10 15 (1) (2) 10	0.03 0.11 0.11 0.21 0.21	5.27 5.27 5.27 5.27 5.27	3-2 2-1 2-2 1-1 1-2	$a^3D - y^3P^o$ (31)	2016. 36 2050. 84	C C	(tr) (5)	0.11 0.21	6.23 6.23	2-1 1-1	$a^3D - x^3P^o$ (45)
2348. 734 2293. 114 2302. 973 2258. 145 2259. 562 2386. 585 2337. 814	A	2 5 10 6 7 10 (1)	0.03 0.11 0.21 0.03 0.11 0.21 0.21	5.28 5.49 5.57 5.49 5.57 5.28 5.49	3-3 2-2 1-1 3-2 2-1 2-3 1-2	$a^3D - w^3D^o$ (32)	2007. 01 1976. 87 1990. 25 2014. 25 Vac	C C C C C	(7) (3 N) (4 N) (12) 0.03 0.11	0.11 6.27 6.31 6.34 6.31	6.26 3-4 2-3 1-2	$a^3D - w^3D^o$ (46)	
2266. 348 2251. 484 2217. 77	A	3 3 (3)	0.03 0.11 0.03	5.47 5.59 5.59	3-4 2-3 3-3	$a^3D - y^3G^o$ (33)	1963. 85 1981. 61	C C	(1) (2)	0.03 0.11	6.31 6.31	3-3 2-2	

Ni I—Continued

Ni I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2705. 463	A	(1)	0. 42	4. 98	2-3	$a^1D - l^o$ (48)	Air 2095. 13 2085. 57	C C	(4) (1)	0. 42 0. 42	6. 31 6. 34	2-3 2-2	$a^1D - u^1F^o$ (65)
2696. 484	A	(2)	0. 42	5. 00	2-2	$a^1D - 2^o$ (49)	2983. 426 2973. 730	A A	4 (1)	1. 67 1. 67	5. 81 5. 82	2-3 2-2	$b^1D - v^1D^o$ (66)
2484. 028	A	5	0. 42	5. 39	2-3	$a^1D - x^1F^o$ (50)	2844. 047	A	(2)	1. 67	6. 01	2-3	$b^1D - v^1F^o$ (67)
2549. 532	A	(2)	0. 42	5. 26	2-3	$a^1D - x^1D^o$ (51)	2838. 951	A	(2)	1. 67	6. 02	2-2	$b^1D - w^1P^o$ (68)
2528. 048	A	(1)	0. 42	5. 30	2-2		2803. 140 2678. 026	A A	(1) (3)	1. 67 1. 67	6. 07 6. 28	2-2 2-1	$b^1D - u^1D^o$ (69)
2547. 409	A	(1)	0. 42	5. 27	2-2	$a^1D - y^1P^o$ (52)	2706. 521	A	(3)	1. 67	6. 23	2-1	$b^1D - z^1P^o$ (70)
2540. 019	A	1?	0. 42	5. 28	2-3	$a^1D - w^1D^o$	2689. 680	A	(4)	1. 67	6. 26	2-2	$b^1D - w^1D^o$ (71)
2434. 412	A	2	0. 42	5. 49	2-2		2643. 146	A	(2)	1. 67	6. 34	2-2	$b^1D - u^1F^o$ (72)
2396. 630	A	3	0. 42	5. 57	2-1		2797. 996	A	(2)	1. 82	6. 23	0-1	$a^1S - x^1P^o$ (73)
2387. 549	A	4	0. 42	5. 59	2-3	$a^1D - y^1G^o$ (54)	3017. 947 2969. 190 2958. 283 2905. 746 *3029. 293	A A A A A	(1) (1) (1) (1) 3	1. 93 1. 94 1. 93 1. 94 1. 94	6. 02 6. 10 6. 10 6. 19 6. 02	2-2 1-1 2-1 1-0 1-2	$a^1P - w^1P^o$ (74)
2429. 092	A	(1)	0. 42	5. 50	2-3	$a^1D - w^1F^o$ (55)	*2991. 106	A	4	1. 93	6. 05	2-3	$a^1P - 6^o$ (75)
2379. 720	A	(1)	0. 42	5. 61	2-2		2868. 739 2878. 998	A A	(1) (3)	1. 93 1. 94	6. 23 6. 23	2-1 1-1	$a^1P - x^1P^o$ (76)
2466. 960	A	(1)	0. 42	5. 42	2-2	$a^1D - x^1D^o$ (56)	2849. 822	A	(1)	1. 93	6. 26	2-2	$a^1P - w^1D^o$ (77)
2450. 465	A	(1)	0. 42	5. 46	2-3?	$a^1D - x^1F^o$ (57)	2930. 908	A	(1)	3. 18	7. 39	4-5	$z^4D^o - g^4F$ (78)
2318. 770	A	(1)	0. 42	5. 74	2-2	$a^1D - x^1P^o$ (58)	2814. 354	A	(3)	3. 37	7. 75	6-7	$z^4G^o - f^4H$ (79)
2173. 535	A	(4)	0. 42	6. 10	2-1	$a^1D - w^1P^o$ (59)							
2201. 59	C	8	0. 42	6. 03	2-	$a^1D - 5^o$ (60)							
2191. 21	C	(3)	0. 42	6. 05	2-3	$a^1D - 6^o$ (61)							
2183. 91	C	2	0. 42	6. 07	2-2	$a^1D - u^1D^o$ (62)							
2107. 21	C	(0)	0. 42	6. 28	2-1								
2124. 80	C	3	0. 42	6. 23	2-1	$a^1D - x^1P^o$ (63)							
2114. 43	C	(4)	0. 42	6. 26	2-2	$a^1D - w^1D^o$ (64)							

Strongest Unclassified Lines of Ni I

Ni II

I P 18.07 Anal B List B October 1949

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Ni II

Ni II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1939. 71	E (4)	0.00	6.36	2½-3½	$a^2D - z^4D^\circ \dagger$	(1)	2165.55	B 40R	1.04	6.73	4½-4½	$a^4F - z^4F^\circ$	(13)
1896. 16	F 5	0.00	6.51	2½-2½			2169.10	B 30R	1.15	6.84	3½-3½		
1804. 48	F 20	0.00	6.84	2½-3½	$a^2D - z^4F^\circ$	(2)	2175.16	B 25R	1.25	6.92	2½-2½		
1832. 68	E (2)	0.19	6.92	1½-2½			2184.61	B 25R	1.32	6.97	1½-1½		
1773. 96	F 10	0.00	6.96	2½-3½	$a^2D - z^3G^\circ$	(3)	2188.60	C 4	1.04	6.84	4½-3½		
1751. 92	F 50	0.00	7.05	2½-3½	$a^2D - z^2F^\circ$	(4)	2158.73	B 8	1.25	6.97	2½-2½		
1754. 81	F 20	0.19	7.22	1½-2½			2210.38	B 20R	1.15	6.73	3½-4½		
1709. 60	F 100	0.00	7.22	2½-2½			2206.71	B 25R	1.25	6.84	2½-3½		
1741. 56	F 30	0.00	7.09	2½-2½	$a^2D - z^2D^\circ$		2201.41	B 20R	1.32	6.92	1½-2½		
1748. 30	F 20	0.19	7.25	1½-1½			2131.27	C 3	1.04	6.83	4½-4½	$a^4F - z^2G^\circ$	(14)
1703. 41	F 10	0.00	7.25	2½-1½			2125.12	C 8	1.15	6.96	3½-3½		
1788. 50	F 200	0.19	7.09	1½-2½			2083.65	C 2	1.04	6.96	4½-3½		
1467. 85	E (3)	0.00	8.41	2½-3½	$a^2D - y^2F^\circ$		2174.67	B 30R	1.15	6.83	3½-4½	$a^4F - z^2F^\circ$	(15)
1510. 86	F 5	0.19	8.36	1½-2½			2161.21	B 10	1.25	6.96	2½-3½		
1454. 96	E (4)	0.00	8.48	2½-2½	$a^2D - y^2D^\circ \dagger$		2053.30	C 5	1.04	7.05	4½-3½		
1500. 44	F 10	0.19	8.41	1½-1½			2033.42	C 3	1.15	7.22	3½-2½		
1370. 20	E (9)	0.00	9.01	2½-1½	$a^2D - y^2P^\circ \dagger$		2093.55	C 8	1.15	7.05	3½-3½		
1381. 36	E (4)	0.19	9.12	1½-0½			2066.41	C 5	1.25	7.22	2½-2½		
1374. 14	E (3)	0.19	9.17	1½-0½	$a^2D - z^2S^\circ$	(9)	2128.57	C 12	1.25	7.05	2½-3½		
1317. 38	E (15)	0.00	9.37	2½-3½	$a^2D - z^2F^\circ$		2090.14	C 5	1.32	7.22	1½-2½	$a^4F - z^2D^\circ \dagger$	(16)
1344. 45	E (00)	0.19	9.37	1½-2½			2078.76	C 3	1.15	7.09	3½-2½		
Air							2057.38	C 2	1.25	7.25	2½-1½		
2316. 034	A 80R	1.04	6.36	4½-3½	$a^4F - z^4D^\circ \dagger$	(11)	2080.84	C 5	1.32	7.25	1½-1½		
2302. 98	B 60R	1.15	6.51	3½-2½			2630.266	A 8	1.67	6.36	3½-3½	$a^2F - z^4D^\circ$	(17)
2297. 140	A 30R	1.25	6.62	2½-1½			2648.713	A 3	1.85	6.51	2½-2½		
2297. 486	A 20R	1.32	6.69	1½-0½			2551.04	B 5	1.67	6.51	3½-2½		
2367. 395	A 20	1.15	6.36	3½-3½			2587.25	B 4	1.85	6.62	2½-1½		
2345. 44	C 15	1.25	6.51	2½-2½			2510.871	A 30	1.67	6.59	3½-4½	$a^2F - z^4G^\circ$	(18)
2326. 44	B 15	1.32	6.62	1½-1½			2545.903	A 20	1.85	6.70	2½-3½		
2412. 25	B 5	1.25	6.36	2½-3½			2455.51	B 8	1.67	6.70	3½-3½		
2216. 479†	A 100R	1.04	6.60	4½-5½	$a^4F - z^4G^\circ$	(12)	2497.80	B 6	1.85	6.79	2½-2½	$a^2F - z^4F^\circ$	(19)
2270. 209	A 40R	1.15	6.59	3½-4½			2410.74	B 4	1.67	6.79	3½-2½		
2264. 456	A 30R	1.25	6.70	2½-3½			2437.892	A 20	1.67	6.73	3½-4½	$a^2F - z^2F^\circ$	(20)
2253. 856	A 20R	1.32	6.79	1½-2½			2473.13	B 15	1.85	6.84	2½-3½		
2222. 948	A 20R	1.04	6.59	4½-4½			2387.77	B 25	1.67	6.84	3½-3½		
2224. 88	B 20R	1.15	6.70	3½-3½			2433.57	B 10	1.85	6.92	2½-2½		
2226. 34	B 18R	1.25	6.79	2½-2½			2350.84	B 8	1.67	6.92	3½-2½		
2179. 46	C 3	1.04	6.70	4½-3½			2413.04	B 8	1.85	6.97	2½-1½		
2188. 05	B 6	1.15	6.79	3½-2½			2394.518	A 50R	1.67	6.83	3½-4½	$a^2F - z^2G^\circ$	(21)
							2416.134	A 50R	1.85	6.96	2½-3½		
							2334.590	A 30	1.67	6.96	3½-3½		
							2296.553	A 30R	1.67	7.05	3½-3½	$a^2F - z^2F^\circ$	(22)
							2298.269	A 30R	1.85	7.22	2½-2½		
							2224.351	A 6	1.67	7.22	3½-2½		
							2375.426	A 30	1.85	7.05	2½-3½		

Ni II—Continued

Ni II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air													
2278.771	A	30R	1. 67	7. 09	$3\frac{1}{2} - 2\frac{1}{2}$	$a ^2F - z ^2D^o$	2287.66	B	10	3. 09	8. 48	$2\frac{1}{2} - 2\frac{1}{2}$	$a ^4P - y ^4D^o$
2287.082	A	20R	1. 85	7. 25	$2\frac{1}{2} - 1\frac{1}{2}$		*2305.24	B	10	3. 06	8. 41	$1\frac{1}{2} - 1\frac{1}{2}$	(38)
2356.41	B	25	1. 85	7. 09	$2\frac{1}{2} - 2\frac{1}{2}$		2318.48	B	12	3. 09	8. 41	$2\frac{1}{2} - 1\frac{1}{2}$	
Vac													
1886.06	F	10	1. 67	8. 22	$3\frac{1}{2} - 2\frac{1}{2}$	$a ^2F - z ^4P^o$	2275.70	B	7	3. 09	8. 51	$2\frac{1}{2} - 1\frac{1}{2}$	$a ^4P - z ^4P^o$
						(23)	2298.50	B	6	3. 06	8. 43	$1\frac{1}{2} - 0\frac{1}{2}$	(39)
1812.07	F	10	1. 67	8. 48	$3\frac{1}{2} - 2\frac{1}{2}$	$a ^2F - y ^2D^o \dagger$	2262.90	B	2	3. 06	8. 51	$1\frac{1}{2} - 1\frac{1}{2}$	
1881.18	F	10	1. 85	8. 41	$2\frac{1}{2} - 1\frac{1}{2}$	(24)	2301.01	B	4	3. 07	8. 43	$0\frac{1}{2} - 0\frac{1}{2}$	
							2265.36	B	2	3. 07	8. 51	$0\frac{1}{2} - 1\frac{1}{2}$	
Air													
2942.71	B	1	2. 85	7. 05	$2\frac{1}{2} - 3\frac{1}{2}$	$b ^2D - z ^2F^o$	2185.51	B	12R	3. 09	8. 74	$2\frac{1}{2} - 3\frac{1}{2}$	$a ^4P - y ^4D^o \dagger$
2881.24	B	2	2. 94	7. 22	$1\frac{1}{2} - 2\frac{1}{2}$		2180.46	B	10	3. 06	8. 72	$1\frac{1}{2} - 2\frac{1}{2}$	
2825.23	B	4	2. 85	7. 22	$2\frac{1}{2} - 2\frac{1}{2}$		2179.36	C	6	3. 07	8. 73	$0\frac{1}{2} - 1\frac{1}{2}$	
							2177.08	B	6	3. 06	8. 73	$1\frac{1}{2} - 1\frac{1}{2}$	
							2177.36	B	6	3. 07	8. 73	$0\frac{1}{2} - 0\frac{1}{2}$	
2913.59	B	15	2. 85	7. 09	$2\frac{1}{2} - 2\frac{1}{2}$	$b ^2D - z ^2D^o$	2127.77	C	6	3. 06	8. 86	$1\frac{1}{2} - 2\frac{1}{2}$	$a ^4P - x ^2D^o \dagger$
2863.706	A	25	2. 94	7. 25	$1\frac{1}{2} - 1\frac{1}{2}$								
2808.35	B	2	2. 85	7. 25	$2\frac{1}{2} - 1\frac{1}{2}$								
2300.10	B	15	2. 85	8. 22	$2\frac{1}{2} - 2\frac{1}{2}$	$b ^2D - z ^4P^o$	2084.87	C	5	3. 09	9. 01	$2\frac{1}{2} - 1\frac{1}{2}$	$a ^4P - y ^4P^o$
2336.59	C	5	2. 94	8. 22	$1\frac{1}{2} - 1\frac{1}{2}$		2074.13	C	2	3. 06	9. 01	$1\frac{1}{2} - 1\frac{1}{2}$	(42)
2299.65	B	8	2. 85	8. 22	$2\frac{1}{2} - 1\frac{1}{2}$								
2312.23	C	4	2. 94	8. 27	$1\frac{1}{2} - 0\frac{1}{2}$								
2220.40	B	10R	2. 85	8. 41	$2\frac{1}{2} - 3\frac{1}{2}$	$b ^2D - y ^2F^o$	2029.20	C	10	3. 09	9. 17	$2\frac{1}{2} - 1\frac{1}{2}$	$a ^4P - z ^4S^o$
2377.31	B	10	2. 94	8. 36	$1\frac{1}{2} - 2\frac{1}{2}$		2019.03	C	10	3. 06	9. 17	$1\frac{1}{2} - 1\frac{1}{2}$	
2242.14	B	2	2. 85	8. 36	$2\frac{1}{2} - 2\frac{1}{2}$		2020.98	C	10	3. 07	9. 17	$0\frac{1}{2} - 1\frac{1}{2}$	
Vac													
2190.97	C	2	2. 85	8. 48	$2\frac{1}{2} - 2\frac{1}{2}$	$b ^2D - y ^2D^o$	1965.35	C	10	3. 09	9. 37	$2\frac{1}{2} - 3\frac{1}{2}$	$a ^4P - x ^2F^o$
2253.67	B	6	2. 94	8. 41	$1\frac{1}{2} - 1\frac{1}{2}$		1956.97	C	6	3. 06	9. 37	$1\frac{1}{2} - 2\frac{1}{2}$	(44)
2224.50	B	2	2. 94	8. 48	$1\frac{1}{2} - 2\frac{1}{2}$								
Air													
2179.99	B	3	2. 85	8. 51	$2\frac{1}{2} - 1\frac{1}{2}$	$b ^2D - z ^2P^o$	2665.25	B	6	3. 59	8. 22	$1\frac{1}{2} - 1\frac{1}{2}$	$a ^2P - z ^4P^o$
2247.24	B	6	2. 94	8. 43	$1\frac{1}{2} - 0\frac{1}{2}$		2670.33	B	3	3. 65	8. 27	$0\frac{1}{2} - 0\frac{1}{2}$	(45)
2213.19	B	7	2. 94	8. 51	$1\frac{1}{2} - 1\frac{1}{2}$		2588.31	B	2	3. 59	8. 36	$1\frac{1}{2} - 2\frac{1}{2}$	$a ^2P - y ^2F^o$
2097.08	C	12	2. 85	8. 74	$2\frac{1}{2} - 3\frac{1}{2}$	$b ^2D - y ^4D^o \dagger$	2520.33	B	2	3. 59	8. 48	$1\frac{1}{2} - 2\frac{1}{2}$	$a ^2P - y ^4D^o \dagger$
2134.28	C	8	2. 94	8. 72	$1\frac{1}{2} - 2\frac{1}{2}$		2557.88	B	6	3. 59	8. 41	$1\frac{1}{2} - 1\frac{1}{2}$	(47)
2103.39	C	5	2. 85	8. 72	$2\frac{1}{2} - 2\frac{1}{2}$								
2131.02	C	2	2. 94	8. 73	$1\frac{1}{2} - 1\frac{1}{2}$								
2129.14	C	3	2. 94	8. 73	$1\frac{1}{2} - 0\frac{1}{2}$								
2054.32	C	5	2. 85	8. 86	$2\frac{1}{2} - 2\frac{1}{2}$	$b ^2D - x ^2D^o \dagger$	2505.84	B	20	3. 59	8. 51	$1\frac{1}{2} - 1\frac{1}{2}$	$a ^2P - z ^2P^o$
2083.76	C	2	2. 94	8. 86	$1\frac{1}{2} - 2\frac{1}{2}$		2584.01	B	8	3. 65	8. 43	$0\frac{1}{2} - 0\frac{1}{2}$	
							2549.56	B	8	3. 59	8. 43	$1\frac{1}{2} - 0\frac{1}{2}$	
							2539.09	B	7	3. 65	8. 51	$0\frac{1}{2} - 1\frac{1}{2}$	
2004.27	C	5	2. 85	9. 01	$2\frac{1}{2} - 1\frac{1}{2}$	$b ^2D - y ^2P^o$	2405.17	B	15	3. 59	8. 72	$1\frac{1}{2} - 2\frac{1}{2}$	$a ^2P - y ^4D^o$
Vac							2431.57	B	8	3. 65	8. 73	$0\frac{1}{2} - 1\frac{1}{2}$	
1995.74	C	4	2. 94	9. 12	$1\frac{1}{2} - 0\frac{1}{2}$		2398.62	B	2	3. 59	8. 73	$1\frac{1}{2} - 0\frac{1}{2}$	
Air													
2032.30	C	5	2. 94	9. 01	$1\frac{1}{2} - 1\frac{1}{2}$		2341.18	B	40	3. 59	8. 86	$1\frac{1}{2} - 2\frac{1}{2}$	$a ^2P - x ^2D^o$
							2336.70	C	15	3. 65	8. 93	$0\frac{1}{2} - 1\frac{1}{2}$	(50)
							2308.52	B	12	3. 59	8. 93	$1\frac{1}{2} - 1\frac{1}{2}$	
Vac													
1953.41	F	10	2. 85	9. 17	$2\frac{1}{2} - 1\frac{1}{2}$	$b ^2D - z ^4S^o$	2276.45	B	5	3. 59	9. 01	$1\frac{1}{2} - 1\frac{1}{2}$	$a ^2P - y ^4P^o$
1980.00	F	5	2. 94	9. 17	$1\frac{1}{2} - 1\frac{1}{2}$		2256.15	B	8	3. 65	9. 12	$0\frac{1}{2} - 0\frac{1}{2}$	
							2229.85	B	3u	3. 59	9. 12	$1\frac{1}{2} - 0\frac{1}{2}$	
							2303.85	B	6	3. 65	9. 01	$0\frac{1}{2} - 1\frac{1}{2}$	
Air													
3087.07	B	20	3. 09	7. 09	$2\frac{1}{2} - 2\frac{1}{2}$	$a ^4P - z ^2D^o$	2211.09	B	8	3. 59	9. 17	$1\frac{1}{2} - 0\frac{1}{2}$	$a ^2P - z ^2S^o$
2947.45	B	8	3. 06	7. 25	$1\frac{1}{2} - 1\frac{1}{2}$		2236.08	B	2	3. 65	9. 17	$0\frac{1}{2} - 1\frac{1}{2}$	(52)
2406.89	B	6	3. 09	8. 22	$2\frac{1}{2} - 2\frac{1}{2}$	$a ^4P - z ^4P^o$	2805.67	B	10	4. 01	8. 41	$4\frac{1}{2} - 3\frac{1}{2}$	$a ^2G - y ^2F^o$
2392.10	B	6	3. 06	8. 22	$1\frac{1}{2} - 1\frac{1}{2}$		2842.401	A	8	4. 01	8. 36	$3\frac{1}{2} - 2\frac{1}{2}$	(54)
2369.23	B	6	3. 07	8. 27	$0\frac{1}{2} - 0\frac{1}{2}$		2760.67	B	2	4. 01	8. 48	$3\frac{1}{2} - 2\frac{1}{2}$	$a ^2G - y ^4D^o$
2406.3	B	5	3. 09	8. 22	$2\frac{1}{2} - 1\frac{1}{2}$							(55)	
2366.56	B	10	3. 06	8. 27	$1\frac{1}{2} - 0\frac{1}{2}$								
2392.58	B	10	3. 06	8. 22	$1\frac{1}{2} - 2\frac{1}{2}$								
2394.843	A	12	3. 07	8. 22	$0\frac{1}{2} - 1\frac{1}{2}$								
2319.73	B	12	3. 09	8. 41	$2\frac{1}{2} - 3\frac{1}{2}$	$a ^4P - y ^2F^o$	2611.66	B	3	4. 01	8. 74	$4\frac{1}{2} - 3\frac{1}{2}$	$a ^2G - y ^4D^o \dagger$
2343.489	A	12	3. 09	8. 36	$2\frac{1}{2} - 2\frac{1}{2}$							(56)	

Ni II—Continued

Ni II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Air 2547.16	B	3	4.01	8.86	$3\frac{1}{2}-2\frac{1}{2}$	$a^2G - x^2D^\circ$ (57)	Air 2684.405 2708.780 2679.25	A 9u 6u	6.73 6.84 6.92	11.33 11.40 11.53	$4\frac{1}{2}-4\frac{1}{2}$ $3\frac{1}{2}-3\frac{1}{2}$ $2\frac{1}{2}-2\frac{1}{2}$	$z^4F^\circ - e^4F$ (63)	
2312.91	B	20	4.01	9.35	$4\frac{1}{2}-5\frac{1}{2}$	$a^2G - z^2H^\circ$ (58)	2655.90 2647.04 2632.86 2631.52	B 5u 5u 2u	6.97 6.73 6.84 6.92	11.61 11.40 11.53 11.61	$1\frac{1}{2}-1\frac{1}{2}$ $4\frac{1}{2}-3\frac{1}{2}$ $3\frac{1}{2}-2\frac{1}{2}$ $2\frac{1}{2}-1\frac{1}{2}$		
2345.26	C	30	4.01	9.28	$3\frac{1}{2}-4\frac{1}{2}$								
2343.93	B	4	4.01	9.28	$4\frac{1}{2}-4\frac{1}{2}$								
2302.465	A	10	4.01	9.37	$4\frac{1}{2}-3\frac{1}{2}?$	$a^2G - x^2F^\circ$ (59)	2565.36	B	2u	6.73	11.55	$4\frac{1}{2}-3\frac{1}{2}?$	$z^4F^\circ - e^2F$ (64)
*2305.24	B	10	4.01	9.37	$3\frac{1}{2}-2\frac{1}{2}?$								
2107.94	C	18R	4.01	9.87	$4\frac{1}{2}-4\frac{1}{2}$	$a^2G - y^2G^\circ$ (60)							
2113.51	C	12	4.01	9.85	$3\frac{1}{2}-3\frac{1}{2}$								
2109.01	C	5	4.01	9.87	$3\frac{1}{2}-4\frac{1}{2}$								
2484.32	B	10u	6.36	11.33	$3\frac{1}{2}-4\frac{1}{2}$	$z^4D^\circ - e^4F$ (61)							
2525.42	B	10u	6.51	11.40	$2\frac{1}{2}-3\frac{1}{2}$								
2514.75	B	6u	6.62	11.53	$1\frac{1}{2}-2\frac{1}{2}$								
2459.32	B	4U	6.51	11.53	$2\frac{1}{2}-2\frac{1}{2}$								
2610.08	B	25u	6.60	11.33	$5\frac{1}{2}-4\frac{1}{2}$	$z^4G^\circ - e^4F$ (62)							
2566.08	B	15u	6.59	11.40	$4\frac{1}{2}-3\frac{1}{2}$								
2555.13	B	10u	6.70	11.53	$3\frac{1}{2}-2\frac{1}{2}$								
2560.30	B	10u	6.79	11.61	$2\frac{1}{2}-1\frac{1}{2}$								
2601.126	B	8u	6.59	11.33	$4\frac{1}{2}-4\frac{1}{2}$		2864.16	B	2U	7.09	11.40	$2\frac{1}{2}-3\frac{1}{2}$	$z^2D^\circ - e^4F$ (67)
2626.57	B	4u	6.70	11.40	$3\frac{1}{2}-3\frac{1}{2}$								
2605.45	B	3u	6.79	11.53	$2\frac{1}{2}-2\frac{1}{2}$		2768.78 2775.31	B	8u 6u	7.09 7.25	11.55 11.69	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$z^2D^\circ - e^2F$ (68)

Strongest Unclassified Lines of Ni II

(List probably incomplete)

Vac 1649.94	F	10					Vac 1614.82	F	15			
1629.28	F	10					1608.44	F	10			
1621.45	F	10					1592.07	F	10			
1619.85	F	10					1585.11	F	10			
1617.14	F	20					1533.44	F	20			
1616.91	F	10					1526.71	F	15			

Ni III

I P 35.21 Anal B List C December 1951

REFERENCE

A A. G. Shenstone, unpublished material (May 1950). W L, I, T, I P

Ni III

Ni III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
*867. 508	A	10	0. 00	14. 23	4-5	<i>a</i> $^4F - z$ $^4G^o$ (1)	752. 023	A	25	0. 17	16. 58	3-3, 2	<i>a</i> $^4F - 7^o$ (10)
867. 194	A	1	0. 17	14. 40	3-4		757. 201	A	10	0. 28	16. 58	2-3, 2	
*867. 508	A	10	0. 28	14. 51	2-3		730. 109	A	30	0. 00	16. 91	4-3	<i>a</i> $^4F - 8^o$ (11)
857. 087	A	15	0. 00	14. 40	4-4		737. 430	A	20	0. 17	16. 91	3-3	
860. 642	A	30	0. 00	14. 34	4-4	<i>a</i> $^4F - z$ $^4F^o$ (2)	722. 094	A	20	0. 00	17. 10	4-3	<i>a</i> $^4F - 9^o$ (12)
862. 882	A	25	0. 17	14. 47	3-3		729. 249	A	10	0. 17	17. 10	3-3	
863. 217	A	25	0. 28	14. 58	2-2								
856. 506	A	1	0. 17	14. 58	3-2								
870. 845	A	10	0. 17	14. 34	3-4								
869. 702	A	10	0. 28	14. 47	2-3								
842. 142	A	30	0. 00	14. 66	4-3	<i>a</i> $^4F - z$ $^4D^o$ (3)	979. 589	A	30	2. 06	14. 66	2-3	<i>a</i> $^4P - z$ $^4D^o \dagger$ (13)
845. 242	A	20	0. 17	14. 77	3-2		973. 786	A	20	2. 10	14. 77	1-2	
847. 433	A	15	0. 28	14. 85	2-1		970. 478	A	10	2. 13	14. 85	0-1	
*758. 763	A	100d	{ 0. 00	16. 27	4-4	<i>a</i> $^4F - y$ $^4F^o \dagger$ (4)	*1769. 643	A	200	6. 63	13. 61	5-5	<i>a</i> $^4F - z$ $^4F^o \dagger$ (14)
			{ 0. 17	16. 44	3-3		1794. 904	A	25	6. 75	13. 63	4-4	
757. 795	A	50	0. 28	16. 57	2-2		1791. 644	A	20	6. 84	13. 73	3-3	
750. 983	A	10	0. 00	16. 44	4-3		1786. 927	A	20	6. 91	13. 82	2-2	
756. 687	A	20	0. 00	16. 31	4-4	<i>a</i> $^4F - 2^o$ (5)	1782. 747	A	20	6. 95	13. 88	1-1	
							1764. 688	A	100	6. 63	13. 63	5-4	
							1767. 938	A	50	6. 75	13. 73	4-3	
751. 333	A	10	0. 00	16. 43	4-3	<i>a</i> $^4F - 3^o$ (6)	*1769. 643	A	200	6. 84	13. 82	3-2	
759. 098	A	20	0. 17	16. 43	3-3		1771. 492	A	20	6. 91	13. 88	2-1	
750. 053	A	30	0. 00	16. 46	4-5, 4	<i>a</i> $^4F - 5^o$ (7)	1718. 365	A	20	6. 63	13. 81	5-4	<i>a</i> $^4F - z$ $^4D^o \dagger$ (15)
							1715. 931	A	20	6. 75	13. 94	4-3	
749. 677	A	10	0. 00	16. 47	4-3	<i>a</i> $^4F - z$ $^4P^o$ (8)	1716. 886	A	15	6. 84	14. 03	3-2	
							1719. 892	A	15	6. 91	14. 09	2-1	
747. 989	A	20	0. 00	16. 50	4-5	<i>a</i> $^4F - y$ $^4G^o$ (9)	1724. 523	A	15	6. 95	14. 11	1-0	
751. 575	A	10	0. 17	16. 59	3-4		1747. 011	A	50	6. 75	13. 81	4-4	
							1738. 252	A	30	6. 84	13. 94	3-3	
							1733. 129	A	50	6. 91	14. 03	2-2	
							1730. 483	A	15	6. 95	14. 09	1-1	

Ni III—Continued

Ni III—Continued

COPPER, Z=29

Cu I

I P 7.693 Anal A List B December 1949

REFERENCES

- A. G. Shenstone, Phil. Trans. Royal Soc. London [A] 241, No. 832, pp. 297-322 (1948). I P, T, W L
 B. Burns and F. M. Walters, Jr., Publ. Allegheny Obs. 8, No. 3, 27 (1930), See Ref. A. W L
 C. Wavelength calculated from term values, but lines have been observed in the laboratory, See Ref. A.
 D. Mass. Inst. Tech. Wavelength Tables (John Wiley and Sons, Inc., N. Y.; Chapman and Hall Ltd., London, 1939), See Ref. A. W L

Cu I

Cu I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2492.146	B	2000R	0.00	4.95	0½-1½	4s ²S -4p' ⁴P°	2961.165	B	2500R	1.38	5.55	2½-3½	4s² ²D -4p' ²F° (15)
2441.637	B	1000R	0.00	5.05	0½-0½	(1)	3279.815	B	2000	1.64	5.40	1½-2½	
							3073.798	B	1400	1.38	5.40	2½-2½	
2244.265	B	2300R	0.00	5.50	0½-1½	4s ²S -4p' ⁴D°	2882.934	B	1500	1.38	5.66	2½-1½	4s² ²D -4p' ²P° (16)
2225.697	B	2100R	0.00	5.54	0½-0½	(2)	3068.906	D	15	1.64	5.66	1½-0½	
2178.944	B	1600R	0.00	5.66	0½-1½	4s ¹S -4p' ²P°	3063.411	B	2500	1.64	5.66	1½-1½	
2181.720	B	1700R	0.00	5.66	0½-0½	(3)							
2165.093	B	1300R	0.00	5.70	0½-1½	4s ¹S -4p' ²D°	2824.370	B	1250R	1.38	5.75	2½-2½	4s² ²D -4p' ²D° (17)
						(4)	3036.101	B	2500	1.64	5.70	1½-1½	
							2858.734	B	200	1.38	5.70	2½-1½	
							2997.364	B	2000	1.64	5.75	1½-2½	
2024.335	A	200R	0.00	6.10	0½-	4s ²S -5p ³P°	2618.366	B	2500R	1.38	6.10	2½-1½	4s² ²D -5p ³P° (18)
						(5)	*2766.371	B	2500R	1.64	6.10	1½-	
Vac													
1825.348	C	100R	0.00	6.76	0½-1½	4s ¹S -6p ³P°	2293.842	B	2500R	1.38	6.76	2½-1½	4s² ²D -6p ³P° (19)
1817.265	C	20*	0.00	6.79	0½-0½	(6)	2392.627	B	2500R	1.64	6.79	1½-0½	
							2406.665	B	1500	1.64	6.76	1½-1½	
1774.820	C	200R	0.00	6.96	0½-1½	4s ²S -4p'' ²P°	2260.528	B	1300R	1.38	6.84	2½-3½	4s² ²D -4f ³F° (20)
1713.364	C	50R	0.00	7.21	0½-0½	(7)							
1703.843	C	30R	0.00	7.25	0½-1½	4s ²S -4p'' ²D°	2230.084	B	2500R	1.38	6.92	2½-3½	4s² ²D -4p'' ²F° (21)
						(8)	2227.775	B	1600R	1.64	7.17	1½-2½	
1725.664	C	50R	0.00	7.15	0½-1½	4s ²S -7p ³P°	2130.762	C	50R	1.38	7.17	2½-2½	
1741.574	C	50R	0.00	7.09	0½-0½	(9)							
1687.043	C	20R	0.00	7.32	0½-1½	4s ¹S -8p ³P°	2214.581	B	1600R	1.38	6.96	2½-1½	4s² ²D -4p'' ³P° (22)
1685.682	C	25R	0.00	7.32	0½-0½	(10)	2215.654	B	1000R	1.64	7.21	1½-0½	
							2319.561	B	500	1.64	6.96	1½-1½	
1664.708	A	10R	0.00	7.42	0½-1½	4s ²S -9p ³P°	2199.583	B	1700R	1.38	6.99	2½-2½	4s² ²D -4p'' ³D° (23)
1664.303	A	10R	0.00	7.42	0½-0½	(11)	2199.752	B	1300R	1.64	7.25	1½-1½	
							2105.112	C	800	1.38	7.25	2½-1½	
1650.301	A	5R	0.00	7.48	0½-1½	4s ²S -10p ³P°	2303.116	B	1000	1.64	6.99	1½-2½	
1650.119	A	5R	0.00	7.48	0½-0½	(12)							
1640.474	A	5R	0.00	7.53	0½-	4s ²S -11p ³P°	2138.533	B	500R	1.38	7.15	2½-1½	4s² ²D -7p ³P° (24)
						(13)	2263.079	B	2200R	1.64	7.09	1½-0½	
							2236.278	B	900R	1.64	7.15	1½-1½	
Air													
3093.989	B	1500	1.38	5.37	2½-3½	4s² ²D -4p' ⁴D°	2140.37	A	(1)	1.38	7.15	2½-3½	4s² ²D -5f ³F° (25)
3208.231	B	140*	1.64	5.48	1½-2½	(14)	2238.454	B	1100R	1.64	7.15	1½-2½	
3010.838	B	2000	1.38	5.48	2½-2½		2140.56	A	(2)	1.38	7.15	2½-2½	
3194.099	B	1500	1.64	5.50	1½-1½		2079.529	A	20R	1.38	7.32	2½-1½	4s² ²D -8p ³P° (26)
2998.384	B	150	1.38	5.50	2½-1½		2169.562	A	300R	1.64	7.32	1½-0½	
3156.629	B	450	1.64	5.54	1½-0½		2171.817	A	200R	1.64	7.32	1½-1½	

Cu I—Continued

Cu I—Continued

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Vac													
1691. 076	A	30	1. 38	8. 68	2½-3½	4s ² 2D - 5p' 4F°†	2702. 65	A	10h	5. 05	9. 62	4½-3½	4p' 4F°-5d' 2G
1688. 865	A	15	1. 38	8. 69	2½-2½	(27)	2802. 556	A	10h	5. 08	9. 48	3½-4½	(47)
1688. 093	A	30	1. 38	8. 70	2½-3½	4s ² 2D - 5p' 4D°†	2751. 29	D	10h	5. 13	9. 62	2½-3½	
1684. 674	A	20h	1. 38	8. 71	2½-2½	(28)	2746. 713	A	20h	5. 13	9. 62	2½-2½	4p' 4F°-5d' 2F
1730. 578	A	10	1. 64	8. 77	1½-1½		2803. 686	A	10h	5. 22	9. 62	1½-2½	(48)
1655. 318	A	30R	1. 38	8. 84	2½-3½	4s ² 2D - 5p' 2F°†	2768. 878	D	125h	5. 05	9. 51	4½-5½	4p' 4F°-5d' 2G†
1732. 674	A	20	1. 64	8. 76	1½-2½	(29)	2723. 953	D	30	5. 08	9. 61	3½-4½	(49)
1651. 721	A	20R	1. 38	8. 86	2½-2½	4s ² 2D - 5p' 2D°	2671. 204	A	20h	5. 13	9. 75	2½-3½	
1701. 292	A	10	1. 64	8. 89	1½-1½	(30)	2720. 199	D	15h	5. 22	9. 76	1½-2½	
1585. 871	A	5h	1. 38	9. 17	2½-1½	4s ² 2D - 5p'' 2P°	2786. 496	D	10h	5. 08	9. 51	3½-2½	4p' 4F°-5d' 2P†
1616. 940	A	20h	1. 64	9. 27	1½-0½	(31)	2783. 551	D	20h	5. 08	9. 51	3½-3½	4p' 4F°-5d' 2D†
1583. 799	A	15	1. 38	9. 18	2½-3½	4s ² 2D - 5p'' 2F°	2763. 809	A	15h	5. 05	9. 52	4½-4½	4p' 4F°-5d' 2F†
1621. 316	A	20	1. 64	9. 25	1½-2½	(32)	2719. 097	A	15h	5. 08	9. 62	3½-3½	(52)
Air							2782. 592	D	20h	5. 08	9. 52	3½-4½	
2494. 89	A	10	3. 80	8. 75	1½-1½	4p 2P° - 4d' 2P†	2715. 543	A	20h	5. 22	9. 77	1½-2½	
2416. 605	A	5	3. 80	8. 91	1½-0½	(33)	2479. 754	A	10	3. 80	8. 78	1½-2½	4p 2P° - 4d' 2D†
							2676. 428	A	20	5. 05	9. 66	4½-3½	4p' 4F°-7s' 2D†
2933. 060	A	20	4. 83	9. 02	2½-3½	4p' 4P° - 4d' 2G	2579. 29	A	20h	5. 05	9. 84	4½-5½	4p' 4F°-6d' 2G†
2858. 225	B	50h	4. 83	9. 13	2½-3½	4p' 4P° - 6s' 2D†	2991. 780	A	15h	5. 50	9. 62	1½-2½	4p' 4D°-5d' 2F†
2931. 699	A	10h	5. 05	9. 26	0½-1½	(36)							(55)
2846. 478	D	15	5. 05	9. 39	0½-0½		2911. 215	A	30h	5. 37	9. 61	3½-4½	4p' 4D°-5d' 2G†
2844. 160	A	15	4. 95	9. 29	1½-1½	4p' 4P° - 4d'' 2P†	2890. 84	A	50h	5. 58	9. 75	2½-3½	(56)
2926. 057	A	10	5. 05	9. 27	0½-0½	(37)	2979. 380	A	25h	5. 37	9. 51	3½-3½	4p' 4D°-5d' 2D†
2851. 743	A	15h	4. 95	9. 28	1½-2½	4p' 4P° - 6s' 2D†	2978. 295	A	30h	5. 37	9. 52	3½-4½	4p' 4D°-5d' 2F†
2734. 858	A	10	4. 83	9. 33	2½-3½	4p' 4P° - 4d'' 2F†	2983. 038	A	3h	5. 48	9. 62	2½-3½	(58)
2634. 933	A	30h	4. 83	9. 50	2½-1½	4p' 4P° - 5d' 2S	2891. 64	A	30h	5. 50	9. 77	1½-2½	
							2922. 830	A	10h	5. 54	9. 77	0½-1½	
2630. 004	A	20h	4. 83	9. 51	2½-2½	4p' 4P° - 5d' 2P	2925. 439	D	30h	5. 40	9. 62	2½-3½	4p' 2F°-5d' 2G†
2649. 840	A	30h	4. 95	9. 61	1½-1½	(41)							(59)
2651. 693	A	10h	4. 95	9. 61	1½-0½		2920. 296	A	10h	5. 40	9. 62	2½-2½	4p' 2F°-5d' 2F†
2627. 365	A	20h	4. 83	9. 51	2½-3½	4p' 4P° - 5d' 2D	2924. 882	D	10h	5. 40	9. 62	2½-2½	(60)
2645. 303	A	20h	4. 95	9. 62	1½-2½	(42)							4p' 2F°-5d' 2D
2626. 678	A	10h	5. 05	9. 75	0½-1½		2923. 704	D	80h	5. 40	9. 62	2½-3½	(61)
2570. 800	A	10h	4. 83	9. 62	2½-2½		2745. 452	A	20h	5. 55	10. 04	3½-3½	4p' 2F°-5d' 2F
2569. 888	A	10h	4. 83	9. 62	2½-3½	4p' 4P° - 5d' 2F	2844. 842	A	10h	5. 70	10. 04	1½-1½	(62)
2563. 167	A	10h	4. 95	9. 77	1½-2½	(43)							4p' 2F°-5d' 2D
2547. 48	A	10h	4. 83	9. 66	2½-3½	4p' 4P° - 7s' 2D†	2751. 810	D	10h	5. 55	10. 04	3½-2½	(63)
							2874. 560	A	20h	5. 75	10. 04	2½-3½	4p' 2F°-5d' 2F
3021. 544	B	300h	5. 05	9. 13	4½-3½	4p' 4F° - 6s' 2D†	2840. 92	A	10h	5. 70	10. 04	1½-2½	(64)
3014. 848	A	30h	5. 08	9. 17	3½-2½	(45)	2875. 67	A	10h	5. 75	10. 04	2½-2½	(65)
2985. 926	A	10h	5. 13	9. 26	2½-1½								4p' 2D°-5d' 2D
3044. 028	D	20h	5. 08	9. 13	3½-3½		2874. 560	A	20h	5. 75	10. 04	2½-3½	(66)
3052. 554	A	15h	5. 13	9. 17	2½-2½		2840. 92	A	10h	5. 70	10. 04	1½-2½	
3053. 38	A	10h	5. 22	9. 26	1½-1½		2875. 67	A	10h	5. 75	10. 04	2½-2½	
2938. 868	A	15h	5. 08	9. 28	3½-2½	4p' 4F° - 6s' 2D†							
2974. 675	A	10	5. 13	9. 28	2½-2½	(46)							

Cu II

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REFERENCE

A A. G. Shenstone, Phil. Trans. Roy. Soc. London [A] 235, No. 751, pp. 195-243 (1936). I P, T, W L, I

Cu II

Cu II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1472. 399	A	20	0.00	8. 38	0-1	$3d^{10} 1S - 4p$ $^3P^o$ (1)	Vac 2000. 339	A	60	2. 71	8. 88	3-3	$4s - 3D - 4p$ $^1F^o$ (16)
1367. 952	A	25	0.00	9. 02	0-1	$3d^{10} 1S - 4p$ $^3D^o$ (2)	Air 2037. 119	A	30	2. 82	8. 88	2-3	
1358. 764	A	30	0.00	9. 09	0-1	$3d^{10} 1S - 4p$ $^1P^o$ (3)	Vac 1944. 586	A	25	2. 71	9. 06	3-2	$4s - 3D - 4p$ $^1D^o$ (17)
826. 995	A	30	0.00	14. 93	0-1	$3d^{10} 1S - 5p$ $^3P^o$ (4)	Air 1979. 947	A	50	2. 82	9. 06	2-2	
810. 997	A	15	0.00	15. 22	0-1	$3d^{10} 1S - 5p$ $^3D^o$ (5)	Vac 2025. 475	A	8	2. 96	9. 06	1-2	
813. 882	A	20	0.00	15. 17	0-1	$3d^{10} 1S - 5p$ $^1P^o$ (6)	Air 1970. 489	A	15	2. 82	9. 09	2-1	$4s - 3D - 4p$ $^1P^o$ (18)
797. 452	A	10	0.00	15. 48	0-1	$3d^{10} 1S - 4p'''$ $^1P^o$ (7)	Air 2015. 576	A	5	2. 96	9. 09	1-1	
736. 031	A	25	0.00	16. 77	0-1	$3d^{10} 1S - 4f$ $^3P^o$ (8)	Vac 1157. 871	A	8	2. 96	13. 62	1-2	$4s - 3D - 4p'$ $^3D^o \uparrow$ (19)
735. 519	A	20	0.00	16. 78	0-1	$3d^{10} 1S - 4f$ $^1P^o$ (9)	Vac 1144. 853	A	30	2. 71	13. 49	3-3	
724. 487	A	15	0.00	17. 04	0-1	$3d^{10} 1S - 4f$ $^3D^o$ (10)	Vac 1142. 642	A	20	2. 82	13. 62	2-2	
718. 171	A	10	0.00	17. 19	0-1	$3d^{10} 1S - 6p$ $^3P^o$ (11)	Vac 1147. 762	A	8	2. 96	13. 72	1-1	
709. 303	A	10	0.00	17. 40	0-1	$3d^{10} 1S - 6p$ $^1P^o$ (12)	Vac 1119. 945	A	15	2. 71	13. 73	3-4	$4s - 3D - 4p'$ $^3G^o \uparrow$ (20)
Air 2246. 995	A	75	2. 71	8. 20	3-2	$4s - 3D - 4p$ $^3P^o$ (13)	Vac 1123. 226	A	5	2. 82	13. 81	2-3	$4s - 3D - 4p'$ $^3F^o \uparrow$ (21)
2218. 100	A	50	2. 82	8. 38	2-1		Vac 1070. 308	A	15	2. 71	14. 24	3-4	$4s - 3D - 4p''$ $^3G^o$ (22)
2228. 863	A	40	2. 96	8. 50	1-0		Vac 1049. 363	A	20	2. 82	14. 58	2-3	
2294. 364	A	40	2. 82	8. 20	2-2		Vac 1039. 345	A	60	2. 71	14. 58	3-3	
2276. 253	A	35	2. 96	8. 38	1-1		Vac 1058. 796	A	40	2. 71	14. 37	3-3	$4s - 3D - 4p''$ $^3D^o$ (23)
2356. 638	A	10	2. 96	8. 20	1-2		Vac 1060. 630	A	60	2. 82	14. 46	2-2	
							Vac 1063. 003	A	60	2. 96	14. 58	1-1	
							Vac 1050. 399	A	10	2. 71	14. 46	3-2	
							Vac 1050. 153	A	10	2. 82	14. 58	2-1	
							Vac 1069. 193	A	50	2. 82	14. 37	2-3	
							Vac 1073. 738	A	30	2. 96	14. 46	1-2	
Air 2135. 976‡	A	75	2. 71	8. 48	3-4	$4s - 3D - 4p$ $^3F^o$ (14)	Vac 1044. 516	A	80	2. 71	14. 53	3-4	$4s - 3D - 4p''$ $^3F^o$ (24)
2192. 260	A	75	2. 82	8. 45	2-3		Vac 1066. 133	A	20	2. 82	14. 40	2-3	
2179. 399	A	60	2. 96	8. 63	1-2		Vac 1052. 170	A	20	2. 96	14. 70	1-2	
2148. 974	A	60	2. 71	8. 45	3-3		Vac 1055. 795	A	40	2. 71	14. 40	3-3	
2126. 028	A	50	2. 82	8. 63	2-2		Vac 1039. 569	A	60	2. 82	14. 70	2-2	
2085. 295	A	8	2. 71	8. 63	3-2		Vac 1029. 747	A	10	2. 71	14. 70	3-2	
2043. 791	A	60	2. 71	8. 75	3-3	$4s - 3D - 4p$ $^3D^o \uparrow$ (15)	Vac 1030. 261	A	20	2. 71	14. 69	3-4	$4s - 3D - 4p''$ $^1G^o$ (25)
2054. 969	A	50	2. 82	8. 83	2-2		Vac 1018. 705	A	50	2. 71	14. 83	3-2	$4s - 3D - 5p$ $^3P^o$ (26)
2035. 845	A	30	2. 96	9. 02	1-1		Vac 1019. 652	A	15	2. 82	14. 93	2-1	
2016. 885	A	8	2. 71	8. 83	3-2		*1018. 054	A	15d	2. 96	15. 09	1-0	
Vac 1989. 849	A	30	2. 82	9. 02	2-1		Vac 1028. 326	A	25	2. 82	14. 83	2-2	
Air 2104. 782	A	40	2. 96	8. 83	1-2		Vac 1031. 764	A	8	2. 96	14. 93	1-1	
							Vac 1011. 52	P		2. 71	14. 91	3-4	$4s - 3D - 5p$ $^3F^o \uparrow$ (27)
							Vac 1022. 100	A	5	2. 82	14. 90	2-3	
							Vac 1012. 595	A	25	2. 71	14. 90	3-3	
							Vac 1001. 010	A	8	2. 82	15. 15	2-2	
							Vac 1020. 106	A	15	2. 82	14. 92	2-2	$4s - 3D - 4p''$ $^1D^o \uparrow$ (28)

Cu II—Continued

Cu II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1008. 568	A	30	2. 71	14. 95	3-3	4s ³ D -4p'' ¹ F° (29)	862. 011	A	40	2. 71	17. 03	3-4	4s ³ D -4p ^{v1} ¹ F°† (46)
*1018. 054	A	15d	2. 82	14. 95	2-3		865. 383	A	40	2. 82	17. 09	2-3	
1004. 053	A	30	2. 71	15. 00	3-3	4s ³ D -5p ¹ D°† (30)	869. 336	A	25	2. 96	17. 16	1-2	
*1008. 726	A	30	2. 82	15. 06	2-2		*858. 482	A	25d	2. 71	17. 09	3-3	
989. 245	A	8	2. 71	15. 19	3-3	4s ³ D -5p ¹ F° (31)	851. 300	A	25	2. 71	17. 21	3-4	4s ³ D -6p ¹ F°† (47)
998. 310	A	8	2. 82	15. 19	2-3		*858. 482	A	25d	2. 82	17. 20	2-3	
992. 951	A	25	2. 82	15. 25	2-2	4s ³ D -5p ¹ D°† (32)	848. 806	A	15	2. 71	17. 25	3-3	4s ³ D -6p ¹ D°† (48)
988. 037	A	25	2. 71	15. 46	3-3	4s ³ D -4p''' ¹ D°† (33)	855. 701	A	10	2. 82	17. 25	2-2	
976. 540	A	10	2. 82	15. 46	2-2		*864. 199	A	10d	2. 96	17. 25	1-2	
984. 530	A	10	2. 96	15. 50	1-1		779. 300	A	8	2. 71	18. 55	3-2	4s ³ D -4p ^{vII} ¹ P°† (49)
976. 708	A	10	2. 82	15. 46	2-3		2400. 112	A	20	3. 24	8. 38	2-1	4s ³ D -4p ¹ P°† (50)
987. 656	A	10	2. 96	15. 46	1-2								
989. 522	A	10	2. 71	15. 85	3-2	4s ³ D -4p ^{IV} ¹ S°† (34)	2369. 887	A	100	3. 24	8. 45	2-3	4s ³ D -4p ¹ F°† (51)
985. 892	A	60	2. 71	15. 90	3-4	4s ³ D -4p''' ¹ F°† (35)	2242. 613	A	50	3. 24	8. 75	2-3	4s ³ D -4p ¹ D° (52)
945. 976	A	50	2. 82	15. 87	2-3		2210. 259	A	60	3. 24	8. 83	2-2	
956. 286	A	25	2. 96	15. 87	1-2		*2134. 355	A	35	3. 24	9. 02	2-1	
945. 860	A	40	2. 82	15. 87	2-2		*2189. 621	A	50	3. 24	8. 88	2-3	4s ³ D -4p ¹ F° (53)
932. 940	A	60	2. 71	15. 94	3-3	4s ³ D -4p ^{IV} ¹ P° (36)	2122. 966	A	50	3. 24	9. 06	2-2	4s ³ D -4p ¹ D° (54)
943. 328	A	60	2. 82	15. 91	2-2		2112. 090	A	30	3. 24	9. 09	2-1	4s ³ D -4p ¹ P° (55)
945. 524	A	60	2. 96	16. 02	1-1								
935. 25	A	40	2. 71	15. 91	3-2								
935. 35	A	20	2. 82	16. 02	2-1								
922. 017	A	60	2. 71	16. 10	3-2	4s ³ D -4p''' ¹ P°† (37)							
							Vac						
914. 209	A	80	2. 71	16. 21	3-3	4s ³ D -4p ^{IV} ¹ D° (38)	1088. 393	A	20	3. 24	14. 58	2-3	4s ³ D -4p'' ¹ G° (56)
*925. 125	A	30	2. 82	16. 17	2-		1065. 781	A	20	3. 24	14. 83	2-2	4s ³ D -5p ¹ P° (57)
*935. 074	A	60	2. 96	16. 17	1-								
917. 303	A	20	2. 71	16. 17	3-2								
924. 239	A	50	2. 82	16. 18	2-3	4s ³ D -4p''' ¹ F° (39)	1059. 094	A	60	3. 24	14. 90	2-3	4s ³ D -5p ¹ F° (58)
							1036. 468	A	60	3. 24	15. 15	2-2	
893. 674	A	80	2. 71	16. 52	3-2	4s ³ D -4p ^V ¹ P° (40)	1056. 952	A	60	3. 24	14. 92	2-2	4s ³ D -4p'' ¹ D° (59)
896. 753	A	60	2. 82	16. 59	2-1		1054. 690	A	60	3. 24	14. 95	2-3	4s ³ D -4p'' ¹ F° (60)
896. 970	A	40	2. 96	16. 73	1-0								
901. 071	A	60	2. 82	16. 52	2-2								
906. 109	A	40	2. 96	16. 59	1-1								
910. 518	A	15	2. 96	16. 52	1-2								
892. 411	A	50	2. 71	16. 54	3-3	4s ³ D -4p ^V ¹ D°† (41)	1049. 754	A	50	3. 24	15. 00	2-3	4s ³ D -5p ¹ D° (61)
894. 226	A	40	2. 82	16. 63	2-2		1044. 742	A	80	3. 24	15. 06	2-2	
*899. 791	A	50	2. 96	16. 68	1-1		1035. 160	A	8	3. 24	15. 17	2-1	4s ³ D -5p ¹ P° (62)
886. 946	A	60	2. 71	16. 63	3-2		1033. 560	A	10	3. 24	15. 19	2-3	4s ³ D -5p ¹ F° (63)
890. 567	A	60	2. 82	16. 68	2-1								
*899. 791	A	50	2. 82	16. 54	2-3								
873. 264	A	15	2. 71	16. 84	3-3	4s ³ D -4p' ¹ F°† (42)	1027. 830	A	50	3. 24	15. 25	2-2	4s ³ D -5p ¹ D° (64)
871. 064	A	8	2. 82	16. 99	2-2								
*864. 199	A	10d	2. 71	16. 99	3-2								
878. 696	A	50	2. 71	16. 76	3-3	4s ³ D -4p' ¹ D° (43)	1010. 453	A	10	3. 24	15. 46	2-3	4s ³ D -4p''' ¹ D°† (65)
877. 559	A	20	2. 82	16. 89	2-2		1010. 267	A	30	3. 24	15. 46	2-2	
877. 839	A	15	2. 96	17. 03	1-1								
870. 544	A	8	2. 71	16. 89	3-2								
869. 062	A	10	2. 82	17. 03	2-1								
885. 842	A	25	2. 82	16. 76	2-3								
886. 515	A	10	2. 96	16. 89	1-2								
877. 007	A	25	2. 71	16. 78	3-2	4s ³ D -4p ^V ¹ D° (44)	977. 567	A	25	3. 24	15. 87	2-3	4s ³ D -4p''' ¹ F° (67)
884. 127	A	10	2. 82	16. 78	2-2		974. 759	A	20	3. 24	15. 91	2-2	4s ³ D -4p ^{IV} ¹ P°† (68)
876. 719	A	20	2. 71	16. 79	3-3	4s ³ D -4f ¹ D° (45)	883. 837	A	20	3. 24	16. 10	2-2	4s ³ D -4p''' ¹ P° (69)

Cu II—Continued

Cu II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac *958. 149	A	40	3. 24	16. 13	2-2	4s 1D - 4p''' 1D° (70)	1265. 504	A	15	8. 38	18. 14	1-2	4p 3P° - 7s 1D† (91)
954. 378	A	20	3. 24	16. 18	2-3	4s 1D - 4p''' 1F° (71)	Air	A	90	8. 48	13. 33	4-3	4p 3F° - 5s 1D† (92)
*925. 125	A	30	3. 24	16. 59	2-1	4s 1D - 4p ^v 3P° (72)	2544. 802	A	90	8. 45	13. 37	3-2	
922. 411	A	20	3. 24	16. 63	2-2	4s 1D - 4p ^v 3D° (73)	2506. 270	A	100	8. 63	13. 59	2-1	
897. 790	A	15	3. 24	16. 99	2-2	4s 1D - 4p' 3F° (74)	2485. 787	A	60	8. 45	13. 33	3-3	
884. 430	A	8	3. 24	17. 20	2-3	4s 1D - 6p 3F° (75)	2526. 589	A	70	8. 63	13. 37	2-2	
Air							2598. 813	A	60	8. 83	13. 62	2-2	4p 3F° - 5s 1D† (93)
2403. 335	A	100	8. 20	13. 33	2-3	4p 3P° - 5s 1D (76)	2468. 51	A	35	8. 48	14. 27	4-5	4p 3F° - 4d 1G† (94)
2473. 332	A	50	8. 38	13. 37	1-2		*2134. 355	A	40	8. 45	14. 28	3-4	
2424. 436	A	60	8. 50	13. 59	0-1		2117. 300	A	50	8. 45	14. 36	3-3	
2384. 94	A	15	8. 20	13. 37	2-2		*2087. 930	A	50	8. 63	14. 54	2-3	
2370. 74	A	80	8. 38	13. 59	1-1		2098. 386	A	30	8. 48	14. 37	4-4	4p 3F° - 4d 1F† (95)
2289. 40	A	10	8. 20	13. 59	2-1		*2087. 930	A	50	8. 45	14. 36	3-3	
2274. 74	A	45	8. 20	13. 62	2-2	4p 3P° - 5s 1D (77)	2151. 801	A	20	8. 63	14. 36	2-3	
2355. 02	A	80	8. 38	13. 62	1-2		1541. 701	A	75	8. 48	16. 49	4-3	4p 3F° - 6s 1D (96)
2078. 646	A	40	8. 20	14. 14	2-1	4p 3P° - 4d 3S† (78)	*1531. 832	A	50d	8. 45	16. 51	3-2	
2145. 48	A	10	8. 38	14. 14	1-1		*1519. 832	A	60	8. 63	16. 75	2-1	
2031. 023	A	40	8. 20	14. 28	2-2	4p 3P° - 4d 3P† (79)	1535. 004	A	25	8. 45	16. 49	3-3	
2093. 606	A	20	8. 38	14. 28	1-1		1565. 925	A	40	8. 63	16. 51	2-2	
2029. 93	A	10	8. 20	14. 28	2-1		1569. 216	A	10	8. 63	16. 49	2-3	
2012. 96	A	15	8. 20	14. 33	2-3	4p 3P° - 4d 3D† (80)	*1485. 659	A	40d	8. 45	16. 76	3-2	4p 3F° - 6s 1D (97)
2062. 41	A	20	8. 38	14. 37	1-2		1517. 630	A	20	8. 63	16. 76	2-2	
*2027. 13	A	10	8. 38	14. 47	1-1	4p 3P° - 4d 3P† (81)	1470. 697	A	40	8. 48	16. 88	4-5	4p 3F° - 5d 1G (98)
2066. 25	A	10	8. 50	14. 47	0-1		*1463. 771	A	50d	8. 45	16. 88	3-4	
Vac							1458. 004	A	25	8. 63	17. 14	2-3	
*1488. 638	A	75d	8. 20	16. 49	2-3	4p 3P° - 6s 1D† (82)	1466. 519	A	10	8. 48	16. 90	4-3	4p 3F° - 5d 1D† (99)
1519. 491	A	50	8. 38	16. 51	1-2		1457. 175	A	10	8. 45	16. 92	3-2	
1496. 686	A	35	8. 50	16. 75	0-1		*1463. 771	A	50d	8. 48	16. 92	4-4	4p 3F° - 5d 1F (100)
*1485. 659	A	40d	8. 20	16. 51	2-2		1458. 004	A	30	8. 45	16. 92	3-3	
1442. 136	A	15	8. 20	16. 76	?	4p 3P° - 6s 1D (83)	1443. 541	A	10	8. 63	17. 18	2-2	
1473. 976	A	25	8. 38	16.			*1488. 638	A	75d	8. 63	16. 92	2-3?	
1430. 243	A	40	8. 20	16.		4p 3P° - 5d 3S	1314. 335	A	30	8. 48	17. 88	4-3	4p 3F° - 7s 1D (101)
1461. 556	A	15	8. 38	16. 83	1	4p 3P° - 5d 3S (84)	1308. 296	A	30	8. 45	17. 89	3-2	
1421. 760	A	25	8. 20	16. 88	2-2	4p 3P° - 5d 3P† (85)	1287. 464	A	15	8. 48	18. 07	4-5	4p 3F° - 6d 1G (102)
1452. 291	A	20	8. 38	16. 88	1-1		1282. 450	A	15	8. 45	18. 08	3-4	
1434. 758	A	15	8. 38	16. 99	1-0		1272. 036	A	8	8. 63	18. 33	2-3	
1418. 423	A	25	8. 20	16. 90	2-3	4p 3P° - 5d 3D† (86)	Air						
1445. 982	A	20	8. 38	16. 92	1-2		2442. 67	A	15	8. 61	13. 66	4-5	4s ² 3F - 4p' 3G°† (103)
1427. 589	A	10	8. 50	17. 15	0-1		2518. 95	A	8	8. 83	13. 73	3-4	
1414. 897	A	10	8. 38	17. 11	1-1	4p 3P° - 5d 3P (87)	2180. 74	A	10	8. 61	14. 26	4-5	4s ² 3F - 4p'' 3G°† (104)
1433. 837	A	10	8. 50	17. 11	0-1		*2189. 621	A	50	8. 61	14. 24	4-4	
1407. 160	A	15	8. 38	17. 16	1-2	4p 3P° - 5d 3D (88)	Vac						
1275. 570	A	30	8. 20	17. 88	2-3	4p 3P° - 7s 3D† (89)	1957. 51	A	20	8. 61	14. 91	4-4	4s ² 3F - 5p 3F°† (105)
1299. 267	A	10	8. 38	17. 89	1-2		1946. 49	A	10	8. 61	14. 95	4-3	4s ² 3F - 4p'' 3F° (106)
1266. 308	A	10	8. 38	18. 13	1-1		1977. 02	A	25d	8. 61	15. 00	4-3	4s ² 3F - 5p 3D° (107)
1250. 045	A	10	8. 20	18. 08	2-2	4p 3P° - 6d 3P† (90)	*1699. 09	A	30	8. 61	15. 87	4-3	4s ² 3F - 4p''' 3F°† (108)
							*1753. 27	A	15	8. 83	15. 87	3-2	

Cu II—Continued

Cu II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	E P		J	Multiplet (No)	
			Low	High					Low	High			
Vac							Vac						
*1688.15	A	40	8.61	15.94	4-3	4s ² 1F — 4p ^{IV} 1P° (109)	1427.835	A	20	8.61	17.25	4-3	4s ² 1F — 6p 1D°† (126)
*1744.80	A	20d?	8.83	15.91	3-2		1459.412	A	25	8.98	17.44	2-1	
*1783.27	A	15	8.98	16.02	2-1		1466.067	A	20	8.83	17.25	3-3	
1736.84	A	10	8.83	16.04	3-3		1492.837	A	30	8.98	17.25	2-2	
1623.17	A	30	8.61	16.21	4-3	4s ² 1F — 4p ^{IV} 1D° (110)	1492.149	A	10	8.98	17.25	2-3	
*1683.15	A	40	8.83	16.17	3-2		1475.846	A	30	8.98	17.34	2-1	4s ² 1F — 4p ^{IV} 1° (127)
*1717.72	A	15	8.98	16.17	2-2		1398.636	A	10	8.61	17.43	4-3	4s ² 1F — 6p 1F° (128)
1672.77	A	10	8.83	16.21	3-3		1435.312	A	10	8.83	17.43	3-3	
1630.27	A	25	8.61	16.18	4-3	4s ² 1F — 4p''' 1F°† (111)	1428.366	A	15	8.83	17.47	3-2	4s ² 1F — 6p 1D° (129)
1605.274	A	30	8.83	16.52	3-2	4s ² 1F — 4p ^V 1P° (112)							
1622.44	A	40	8.98	16.59	2-1								
1636.61	A	10	8.98	16.52	2-2								
1555.698	A	50	8.61	16.54	4-3	4s ² 1F — 4p ^V 1D°† (113)	Air						
1583.683	A	60	8.83	16.63	3-2		2689.299	A	80	8.75	13.33	3-3	4p 1D° — 5s 1D (130)
1602.250	A	15	8.98	16.68	2-1		2713.505	A	80	8.83	13.37	2-2	
1552.641	A	50	8.61	16.56	4-5	4s ² 1F — 4p' 1G° (114)	2703.184	A	100	9.02	13.59	1-1	
1555.134	A	40	8.83	16.77	3-4		2666.288	A	50	8.75	13.37	3-2	
1553.893	A	25	8.98	16.92	2-3		2590.526	A	90	8.83	13.59	2-1	
1512.174	A	20	8.61	16.77	4-4		2737.339	A	10	8.83	13.33	2-3	
*1525.653	A	10	8.83	16.92	3-3		2837.364	A	60	9.02	13.37	1-2	
1537.560	A	50	8.61	16.63	4-4	4s ² 1F — 4p' 1F° (115)	2529.302	A	100	8.75	13.62	3-2	4p 1D° — 5s 1D (131)
1540.589	A	30	8.83	16.84	3-3		2571.746	A	60	8.83	13.62	2-2	
1540.231	A	20	8.98	16.99	2-2		2230.40	A	10	8.75	14.28	3-4	4p 1D° — 4d 1G† (132)
1581.991	A	40	8.83	16.63	3-4		2161.314	A	30	8.83	14.54	2-3	
1569.426	A	10	8.98	16.84	2-3		2231.571	A	30	8.75	14.28	3-2	4p 1D° — 4d 1P† (133)
1512.457	A	20	8.83	16.99	3-2		2263.212	A	8	8.83	14.28	2-1	
1514.492	A	50	8.61	16.76	4-3	4s ² 1F — 4p' 1D°† (116)	2348.74	A	15	9.02	14.28	1-1	
1532.124	A	30	8.83	16.89	3-2		2209.795	A	30	8.75	14.33	3-3	4p 1D° — 4d 1D† (134)
1533.976	A	25	8.98	17.03	2-1		2226.773	A	40	8.83	14.37	2-2	
1557.583	A	20	8.83	16.76	3-3		*2230.087\$	A	30	9.02	14.56	1-1	
1508.627	A	30	8.61	16.79	4-3	4s ² 1F — 4f 1D° (117)	2195.674	A	25	8.75	14.37	3-4	4p 1D° — 4d 1F† (135)
1551.379	A	30	8.83	16.79	3-3		2229.850	A	30	8.83	14.36	2-3	
1580.025	A	15	8.98	16.79	2-2		2200.498	A	25	9.02	14.63	1-2	
1580.628	A	30	8.98	16.79	2-3		2125.098	A	20	8.75	14.55	3-4	4p 1D° — 4d 1G (136)
1505.384	A	20	8.61	16.81	4-4	4s ² 1F — 4f 1F°† (118)							
1547.950	A	10	8.83	16.81	3-4								
1579.492	A	30	8.98	16.79	2-3								
1504.755	A	25	8.61	16.81	4-5	4s ² 1F — 4f 1G°† (119)	2218.504	A	25	9.02	14.59	1-2	4p 1D° — 4d 1D (137)
*1525.794	A	30	8.98	17.07	2-3		*2027.13	A	10	9.02	15.11	1-0	4p 1D° — 4d 1S (138)
1550.644	A	30	8.98	16.94	2-1	4s ² 1F — 4p ^V 1P° (120)	Vac						
1465.542	A	15	8.61	17.03	4-4	4s ² 1F — 4p ^{VI} 1F°† (121)	1593.557	A	60	8.75	16.49	3-3	4p 1D° — 6s 1D (139)
1495.426	A	25	8.83	17.09	3-3		1606.834	A	40	8.83	16.51	2-2	
1508.175	A	25	8.98	17.16	2-2		1598.402	A	40	9.02	16.75	1-1	
1481.541	A	20	8.83	17.16	3-2		1590.164	A	40	8.75	16.51	3-2	
1522.575	A	15	8.98	17.09	2-3		1558.344	A	30	8.83	16.75	2-1	
*1531.832	A	50d	8.98	17.04	2-2	4s ² 1F — 4f 1D° (122)	1610.298	A	15	8.83	16.49	2-3	
1499.510	A	10	8.83	17.06	3-4	4s ² 1F — 4f 1G° (123)	1649.457	A	25	9.02	16.51	1-2	
1503.368	A	15	8.98	17.19	2-1	4s ² 1F — 6p 1P° (124)	1540.391	A	30	8.75	16.76	3-2	4p 1D° — 6s 1D (140)
1434.916	A	25	8.61	17.21	4-4	4s ² 1F — 6p 1F° (125)	1485.318	A	20	8.83	17.14	2-3	4p 1D° — 5d 1G† (141)
1474.934	A	20	8.83	17.20	3-3								
1449.056	A	20	8.98	17.50	2-2								
1436.233	A	15	8.61	17.20	4-3								
1473.531	A	15	8.83	17.21	3-4								
1501.333	A	10	8.98	17.20	2-3								
							1517.162	A	10	8.75	16.88	3-2	4p 1D° — 5d 1P (142)
							*1531.832	A	50d	8.83	16.88	2-1	
							1513.360	A	20	8.75	16.90	3-3	4p 1D° — 5d 1D (143)
							1524.857	A	20	8.83	16.92	2-2	
							*1519.832	A	60	9.02	17.15	1-1	

Cu II—Continued

Cu II—Continued

I A	Ref	Int	E P		J	Multiplet (No)		I A	Ref	E P		J	Multiplet (No)	
			Low	High						Low	High			
Vac								Air						
1510. 502	A	35	8. 75	16. 92	3-4	4p 1D° - 5d (144)	3F†	2884. 20	A	20	9. 06	13. 33	2-3	4p 1D° - 5s (164)
*1525. 794	A	30	8. 83	16. 92	2-3			2857. 746	A	10	9. 06	13. 37	2-2	
1511. 238	A	10	9. 02	17. 18	1-2			2721. 675	A	100	9. 06	13. 59	2-1	
1469. 691	A	15	8. 75	17. 15	3-4	4p 1D° - 5d (145)	3G	2700. 963	A	100	9. 06	13. 62	2-2	4p 1D° - 5s (165)
1517. 930	A	10	9. 02	17. 16	1-2	4p 1D° - 5d (146)	3D	2212. 741	A	10	9. 06	14. 63	2-2	4p 1D° - 4d (166)
1351. 837	A	25	8. 75	17. 88	3-3	4p 1D° - 7s (147)	3D	2230. 948	A	30	9. 06	14. 59	2-2	4p 1D° - 4d (167)
1362. 598	A	20	8. 83	17. 89	2-2			2215. 100	A	35	9. 06	14. 63	2-3	4p 1D° - 4d (168)
1355. 304	A	15	9. 02	18. 13	1-1			Vac						
1350. 592	A	15	8. 75	17. 89	3-2			1660. 005	A	20	9. 06	16. 49	2-3	4p 1D° - 6s (169)
1326. 394	A	10	8. 83	18. 13	2-1			1656. 326	A	20	9. 06	16. 51	2-2	
1393. 126	A	10	9. 02	17. 89	1-2			1604. 848	A	20	9. 06	16. 75	2-1	
1320. 687	A	10	8. 75	18. 09	3-4	4p 1D° - 6d (148)	3F†	1523. 740	A	10	9. 06	17. 16	2-2	4p 1D° - 5d (171)
1314. 147	A	15	8. 75	18. 14	3-2	4p 1D° - 7s (149)	3D†	1602. 387	A	40	9. 06	16. 76	2-2	4p 1D° - 6s (170)
Air								1520. 543	A	20	9. 06	17. 17	2-3	4p 1D° - 5d (172)
2769. 666	A	70	8. 88	13. 33	3-3	4p 1F° - 5s (150)	3D	1359. 010	A	20	9. 06	18. 14	2-2	4p 1D° - 7s (173)
2745. 275	A	60	8. 88	13. 37	3-2	4p 1F° - 5s (151)	3D	Air						
2600. 266	A	100	8. 88	13. 62	3-2	4p 1F° - 5s (151)	3D	2877. 698	A	80	9. 09	13. 37	1-2	4p 1P° - 5s (174)
2286. 642	A	15	8. 88	14. 28	3-2	4p 1F° - 4d (152)	3P	2739. 768	A	70	9. 09	13. 59	1-1	
2263. 780	A	35	8. 88	14. 33	3-3	4p 1F° - 4d (153)	3D	2718. 775	A	100	9. 09	13. 62	1-2	4p 1P° - 5s (175)
2248. 960	A	25	8. 88	14. 37	3-4	4p 1F° - 4d (154)	3F†	2376. 29	A	50	9. 09	14. 28	1-1	4p 1P° - 4d (176)
2174. 968	A	50	8. 88	14. 55	3-4	4p 1F° - 4d (155)	3G	2336. 17	A	20	9. 09	14. 37	1-2	4p 1P° - 4d (177)
2146. 91	A	15	8. 88	14. 63	3-3	4p 1F° - 4d (156)	3F	2224. 701	A	15	9. 09	14. 63	1-2	4p 1P° - 4d (178)
Vac								2290. 998	A	15	9. 09	14. 47	1-1	4p 1P° - 4d (179)
1621. 426	A	60	8. 88	16. 49	3-3	4p 1F° - 6s (157)	3D	2047. 65	A	20	9. 09	15. 11	1-0	4p 1P° - 4d (180)
1617. 914	A	20	8. 88	16. 51	3-2	4p 1F° - 6s (158)	3D	Vac						
1566. 411	A	40	8. 88	16. 76	3-2	4p 1F° - 6s (158)	3D	1663. 003	A	30	9. 09	16. 51	1-2	4p 1P° - 6s (181)
*1538. 488	A	10	8. 88	16. 90	3-3	4p 1F° - 5d (159)	3D	1611. 113	A	10	9. 09	16. 75	1-1	
1535. 515	A	15	8. 88	16. 92	3-4	4p 1F° - 5d (160)	2F	1608. 638	A	25	9. 09	16. 76	1-2	4p 1P° - 6s (182)
1493. 359	A	25	8. 88	17. 15	3-4	4p 1F° - 5d (161)	3G	1582. 849	A	10	9. 09	16. 88	1-1	4p 1P° - 5d (183)
1371. 840	A	20	8. 88	17. 88	3-3	4p 1F° - 7s (162)	3D†	*1538. 488	A	10	9. 09	17. 11	1-1	4p 1P° - 5d (184)
*1333. 054	A	20d	8. 88	18. 14	3-2	4p 1F° - 7s (163)	3D	1492. 684	A	10	9. 09	17. 36	1-0	4p 1P° - 5d (185)
								1402. 776	A	15	9. 09	17. 89	1-2	4p 1P° - 7s (186)

Cu III

I P 36.91 Anal A List C December 1951

REFERENCE

A A. G. Shenstone and L. Wilets, Phys. Rev. 83, 104 (1951). W L, I, T, I P

Cu III

Cu III

I A	Ref	Int	E P		J	Multiplet (No.)	I A	Ref	Int	E P		J	Multiplet (No.)
			Low	High						Low	High		
Vac							Vac						
802. 841	A	150	0. 00	15. 38	2½-3½	a ²D - z ⁴F°†	1741. 378	A	500d?	8. 27	15. 36	3½-4½	a ²F - z ⁴G°
797. 566	A	100	0. 00	15. 48	2½-2½	(1)	1750. 391	A	500	8. 51	15. 57	2½-3½	(17)
793. 065	A	100	0. 00	15. 57	2½-3½	a ²D - z ⁴G°	1692. 706	A	300	8. 27	15. 57	3½-3½	
(2)							1671. 886	A	500	8. 27	15. 66	3½-3½	a ²F - z ⁴F°†
788. 462	A	300	0. 00	15. 66	2½-3½	a ²D - z ⁴F°	1674. 602	A	500	8. 51	15. 89	2½-2½	(18)
789. 840	A	200	0. 26	15. 89	1½-2½	(3)	1728. 139	A	200	8. 51	15. 66	2½-3½	
777. 125	A	200	0. 00	15. 89	2½-2½		1670. 140	A	500	8. 27	15. 66	3½-2½	a ²F - z ⁴D°†
							1681. 481	A	300	8. 51	15. 86	2½-1½	(19)
788. 073	A	400	0. 00	15. 66	2½-2½	a ²D - z ⁴D°							
791. 371	A	300	0. 26	15. 86	1½-1½	(4)	Air						
778. 603	A	50	0. 00	15. 86	2½-1½		2438. 47	A	25	9. 63	14. 67	2½-3½	b ²D - z ⁴D°†
801. 154	A	200	0. 26	15. 66	1½-2½		2346. 17	A	40	9. 63	14. 89	2½-2½	(20)
732. 028	A	100	0. 00	16. 86	2½-2½	a ²D - z ⁴P°†	Vac						
(5)							1705. 333	A	300	9. 63	16. 86	2½-2½	b ²D - z ⁴P°†
719. 506	A	150	0. 00	17. 16	2½-3½	a ²D - y ⁴F°	1708. 958	A	200	9. 63	16. 85	2½-1½	(21)
735. 224	A	100	0. 26	17. 05	1½-2½	(6)	1638. 956	A	300	9. 63	17. 16	2½-3½	b ²D - y ⁴F°
715. 530	A	200	0. 00	17. 25	2½-2½	a ²D - y ⁴D°†	1686. 214	A	300	9. 73	17. 05	1½-2½	
730. 365	A	150	0. 26	17. 16	1½-1½	(7)	Air						
693. 510	A	50	0. 00	17. 80	2½-2½	a ²D - x ⁴D°†	2609. 31	A	50	9. 94	14. 67	2½-3½	a ⁴P - z ⁴D°†
700. 271	A	150	0. 26	17. 88	1½-1½	(8)	2482. 34	A	30	9. 91	14. 89	1½-2½	(23)
690. 250	A	75	0. 00	17. 88	2½-1½		2412. 32	A	15	9. 93	15. 04	0½-1½	
687. 987	A	100	0. 00	17. 94	2½-1½	a ²D - y ⁴P°†	2497. 58	A	20	9. 94	14. 89	2½-2½	
691. 557	A	100	0. 26	18. 11	1½-0½	(9)	2405. 49	A	20	9. 91	15. 04	1½-1½	
676. 564	A	300	0. 00	18. 25	2½-3½	a ²D - x ⁴F°	Vac						
682. 171	A	200	0. 26	18. 35	1½-2½	(10)	1689. 051	A	200	9. 94	17. 25	2½-2½	a ⁴P - y ⁴D°†
672. 659	A	50	0. 00	18. 35	2½-2½		1605. 969	A	300	9. 94	17. 63	2½-3½	a ⁴P - y ⁴D°†
							1609. 757	A	100	9. 91	17. 58	1½-2½	(25)
1722. 379	A	1000	7. 51	14. 67	4½-3½	a ⁴F - z ⁴D°†	1610. 571	A	75	9. 93	17. 59	0½-1½	
1709. 036	A	700	7. 66	14. 89	3½-2½	(11)	*1607. 542	A	100	9. 91	17. 59	1½-1½	
1702. 994	A	500	7. 80	15. 04	2½-1½		1609. 599	A	50	9. 93	17. 60	0½-0½	
1702. 102	A	400	7. 89	15. 14	1½-0½		Air						
1642. 208	A	2000	7. 51	15. 02	4½-5½	a ⁴F - z ⁴G°†	1702. 190	A	300	10. 55	17. 80	1½-2½	a ²P - x ⁴D°
1687. 134	A	600	7. 66	14. 98	3½-4½	(12)	1702. 349	A	30	10. 63	17. 88	0½-1½	(26)
1684. 642	A	500	7. 80	15. 12	2½-3½		1682. 695	A	30	10. 55	17. 88	1½-1½	
1679. 151	A	400	7. 89	15. 24	1½-2½		1688. 618	A	100	10. 63	17. 94	0½-1½	a ²P - y ⁴P°†
1652. 010	A	300	7. 51	14. 98	4½-4½		*1607. 542	A	100	10. 55	18. 23	1½-0½	(27)
1654. 574	A	300	7. 66	15. 12	3½-3½		Air						
1658. 472	A	200	7. 80	15. 24	2½-2½		2643. 92	A	40	10. 99	15. 66	4½-3½	a ²G - z ⁴F°
1593. 758	A	1000	7. 51	15. 25	4½-4½	a ⁴F - z ⁴F°†	2522. 36	A	25	10. 99	15. 89	3½-2½	(29)
1600. 194	A	500	7. 66	15. 38	3½-3½	(13)	1603. 146	A	400	10. 99	18. 23	4½-5½	a ²G - z ⁴H°†
1606. 730	A	300	7. 80	15. 48	2½-2½		1705. 633	A	300	10. 99	18. 09	3½-4½	(30)
1616. 607	A	300	7. 89	15. 52	1½-1½		1739. 508	A	300	10. 99	18. 25	4½-3½	a ²G - x ⁴F°
1626. 411	A	200	7. 66	15. 25	3½-4½		1677. 373	A	200	10. 99	18. 35	3½-2½	(31)
1628. 295	A	300	7. 80	15. 38	2½-3½		1543. 438	A	500	10. 99	18. 99	4½-4½	a ²G - y ⁴G°†
1626. 139	A	200	7. 89	15. 48	1½-2½		1548. 867	A	300	10. 99	18. 96	3½-3½	(32)
1840. 917	A	200	8. 27	14. 98	3½-4½	a ²F - z ⁴G°							
1867. 747	A	50	8. 51	15. 12	2½-3½	(15)							
1768. 869	A	200	8. 27	15. 25	3½-4½	a ²F - z ⁴F°							
						(16)							

ZINC, Z=30

Zn I

I P 9.35 Anal A List C March 1950

REFERENCES

- A C. W. Hetzler, R. W. Boreman, and K. Burns, Phys. Rev. 48, 656 (1935). W L, I, T
 B See A. Fowler, *Report on Series in Line Spectra* p. 139 (Fleetway Press, London, 1922). W L, (I), T

Zn I

Zn I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2138.56	A	100R	0.00	5.77	0-1	4s ² 1S - 4p ¹ P ^o (1)	2800.869 2770.865 2756.452 2801.056 2770.984	A A A A A	80 80 60 15 25	4.06 4.01 3.99 4.06 4.01	8.47 8.47 8.47 8.47 8.47	2-3 1-2 0-1 2-2 1-1	4p ¹ P ^o - 5f ¹ D [†] (5)
Vac 1632.11	B	(4)	0.00	7.56	0-1	4s ² 1S - 5p ¹ P ^o (2)	2712.488 2684.161 2670.530	A A A	10 6 2	4.06 4.01 3.99	8.61 8.61 8.61	2-1 1-1 0-1	4p ¹ P ^o - 7s ¹ S (6)
1589.76	B	(10)	0.00	7.77	0-1	4s ² 1S - 5p ¹ P ^o (3)	2608.558 2582.440 2569.871	A A A	30 7 8	4.06 4.01 3.99	8.79 8.79 8.79	2-3 1-2 0-1	4p ¹ P ^o - 6d ¹ D [†] (7)
1457.572	P	(4)	0.00	8.47	0-1	4s ² 1S - 6p ¹ P ^o (4)	2567.80 2542.32 2530.09	B B B	(6r) (6r) (2r)	4.06 4.01 3.99	8.87 8.87 8.87	2-1 1-1 0-1	4p ¹ P ^o - 8s ¹ S (8)

Zn II

I P 17.89 Anal B List C February 1950

REFERENCES

- A C. W. Hetzler, R. W. Boreman, and K. Burns, Phys. Rev. **48**, 657 (1935). W L
 B A. G. Shenstone and L. E. Gibson, unpublished material (February 1950). W L, T
 See F. A. Saunders, Astroph. J. **43**, 239 (1917). I
 G. v. Salis, Ann. der Phys. [4] **76**, 145 (1925). I, T
 R. J. Lang, Proc. Nat. Acad. Sci. **15**, 414 (1929). I
 Y. Takahashi, Ann. der Phys. [5] **3**, 27 (1929). I, T

Zn II

Zn II

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2025. 512 2062. 016	B B	10 9	0. 00 0. 00	6. 09 5. 98	0½-1½ 0½-0½	4s ¹ S - 4p ¹ P° (1)	Vac 1535. 05 1514. 75	B B	20 10	6. 09 5. 98	14. 13 14. 13	1½-0½ 0½-0½	4p ¹ P°-6s ¹ S (5)
Vac 984. 16 986. 54	B B	1 1	0. 00 0. 00	12. 54 12. 51	0½-1½ 0½-0½	4s ¹ S - 5p ¹ P° (2)	1456. 90 1439. 10 1457. 40	B B B	50 30 10	6. 09 5. 98 6. 09	14. 57 14. 56 14. 56	1½-2½ 0½-1½ 1½-1½	4p ¹ P°-5d ³ D (6)
Air 2557. 958 2502. 001	A A	8 7	6. 09 5. 98	10. 92 10. 92	1½-0½ 0½-0½	4p ¹ P°-5s ¹ S (3)	Air 2570. 66 2782. 82 2763. 93	B B B	2 1. 5 0	7. 74 8. 08 8. 08	12. 54 12. 51 12. 54	2½-1½ 1½-0½ 1½-1½	4s ¹ D-5p ³ P° (7)
2099. 88 2064. 245 2102. 173	B B B	9 7 3	6. 09 5. 98 6. 09	11. 96 11. 97 11. 97	1½-2½ 0½-1½ 1½-1½	4p ¹ P°-4d ³ D (4)	1833. 48 1929. 67	B B	1. 5 1	7. 74 8. 08	14. 48 14. 48	2½-3½ 1½-2½	4s ¹ D-4f ³ F° (8)

GALLIUM, Z=31

Ga I

I P 5.97 Anal A List B November 1951

REFERENCES

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 C E. Klein, *Astroph. J.* **56**, 373 (1922). W L, (I)
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Ga I

Ga I

Ga II

I P 20.43 Anal B List C January 1952

REFERENCE

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Ga II

Ga II

GERMANIUM, Z=32

Ge I

I P 7.85 Anal B List C May 1950

REFERENCES

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 C K. R. Rao, Proc. Roy. Soc. (London) [A] **124**, 465 (1929). W L, (I), T
 D C. W. Gartlein, unpublished material (August 1950). W L, I

Ge I

Ge I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2651. 184†	A	30	0.17	4.83	2-2	4p ² 3P - 5s 1P°	2314. 20	B	10	0.88	6.21	2-3	4p ² 1D - 4d 1F°
2691. 351	A	30	0.07	4.65	1-1	(1)	2327. 92	B	15	0.88	6.18	2-2	(10)
2754. 596	A	50	0.17	4.65	2-1		2198. 73	B	15R	0.88	6.49	2-3	4p ² 1D - 4d 1F°
2709. 631	A	40	0.07	4.62	1-0		2186. 46	B	5	0.88	6.52	2-1	(11)
2592. 548	A	30	0.07	4.83	1-2		2124. 76	B	5	0.88	6.69	2-1	4p ² 1D - 4d 1P°
2651. 580	A	20	0.00	4.65	0-1		2057. 25	B	5R	0.88	6.88	2-2	4p ² 1D - 6s 1P°
2589. 201	A	12	0.17	4.94	2-1	4p ² 3P - 5s 1P°	2011. 31	B	4R	0.88	7.02	2-3	(12)
2553. 241	A	15	0.07	4.94	1-1	(2)							
2497. 974	A	15	0.00	4.94	0-1		2043. 79	B	7R	0.17	6.07	2-3	4p ² 3P - 4d 1D°
2094. 27	B	10R	0.17	6.07	2-3	(3)	1962. 11	C	6R	0.88	7.17	2-2	4p ² 1D - 5d 1D°
2068. 66	B	9R	0.27	6.03	1-2		1929. 89	C	4R	0.88	7.28	2-3	(14)
2041. 72	B	8R	0.00	6.04	0-1		1923. 52	C	(5)	0.88	7.30	2-1	4p ² 1D - 7s 1P°
2105. 83	B	5	0.17	6.03	2-2		*1860. 10§	D	3	0.88	7.52	2-2	(15)
2065. 22	B	6R	0.07	6.04	1-1		1904. 72	D	5	0.17	6.66	2-2	4p ² 1D - 4d 1F°
2102. 26	B	3	0.17	6.04	2-1		1846. 97	D	2	0.88	7.56	2-3	(16)
2043. 79	B	7R	0.17	6.21	2-3	4p ² 3P - 4d 1F°	2829. 012	A	9	2.02	6.38	0-1	4p ² 1D - 4p ² 1D°
2019. 08	B	6R	0.07	6.18	1-2	(4)	2793. 935	A	10	2.02	6.44	0-1	(17)
2054. 46	B	5	0.17	6.18	2-2		2740. 436	A	20	2.02	6.52	0-1	4p ² 1D - 5d 1F°
Vac							2644. 192	A	8	2.02	6.69	0-1	(18)
1998. 91	C	7R	0.17	6.35	2-2	4p ² 3P - 4d 1P°	2556. 288	A	10	2.02	6.85	0-1	4p ² 1S - 6s 1P°
1955. 14	C	4R	0.07	6.38	1-1	(5)							
1988. 28	C	4R	0.17	6.38	2-1								
1944. 66	C	2R	0.07	6.42	1-0								
1965. 39	C	(4)	0.07	6.35	1-2								
1934. 08	C	(4)	0.00	6.38	0-1								
1904. 72	D	5	0.17	6.66	2-2	4p ² 3P - 6s 1P°							
1938. 32	C	(6)	0.07	6.44	1-1	(6)							
1970. 89	C	(6)	0.17	6.44	2-1								
1937. 49	C	(6)	0.07	6.44	1-0								
1874. 27	D	3	0.07	6.66	1-2								
1917. 62	C	(5)	0.00	6.44	0-1								
1842. 43	D	2	0.17	6.87	2-3	4p ² 3P - 5d 1D°†							
1824. 33	D	2	0.07	6.84	1-2	(7)							
1802. 66	D	1	0.00	6.85	0-1								
Air													
2417. 375	A	20	0.88	5.98	2-2	4p ² 1D - 4d 1D°							
2379. 14	B	12	0.88	6.07	2-3	(8)							
2394. 09	B	4	0.88	6.03	2-2	4p ² 1D - 4d 1D°							
2389. 48	B	5	0.88	6.04	2-1	(9)							

Ge II

I P 15.87 Anal A List B November 1951

REFERENCES

- A** C. W. Gartlein, unpublished material (1950). W L, I, T
 K. W. Meissner and K. L. Andrew, unpublished material (Sept. 1951). W L, (I), T
 R. J. Lang, Phys. Rev. **34**, 697 (1929). W L, (I), T

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I P 9.76 Anal A List C May 1950

REFERENCE

A W. F. Meggers, A. G. Shenstone, and C. E. Moore, J. Research Nat. Bur. Std. 45, 346, RP2144 (1950). W L, I, T
As I As I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1890. 42‡	A	2000R	0.00	6.53	1½-2½	4p ³ ^S° - 5s ^P	1573. 85	A	60	1. 35	9. 19	2½-2½	4p ³ ^D° - 4d'' ^D†
1937. 59	A	1500R	0.00	6.37	1½-1½	(1)	1557. 20	A	30	1. 31	9. 24	1½-1½	
1972. 62	A	1000R	0.00	6.26	1½-0½								
							Air						
1831. 30	A	50	0.00	6.74	1½-1½	4p ³ ^S° - 5s ^P	2990. 99	A	20	2. 25	6. 37	0½-1½	4p ³ ^P° - 5s ^P
1881. 96	A	40	0.00	6.56	1½-0½	(2)	3032. 85	A	40	2. 30	6. 37	1½-1½	(15)
							3075. 32	A	20	2. 25	6. 26	0½-0½	
1806. 15	A	200	0.00	6.83	1½-2½	4p ³ ^S° - 4p ⁴ ^P	3119. 60	A	50	2. 30	6. 26	1½-0½	
1758. 60	A	100	0.00	7.02	1½-1½	(3)	2780. 22	A	200r	2. 30	6. 74	1½-1½	4p ³ ^P° - 5s ^P
*1739. 49	A	60	0.00	7.10	1½-0½		2860. 44	A	100r	2. 25	6. 56	0½-0½	(16)
							2898. 71	A	50r	2. 30	6. 56	1½-0½	
1593. 60	A	100R	0.00	7.75	1½-2½	4p ³ ^S° - 4d ^P	2745. 00	A	50r	2. 25	6. 74	0½-1½	
1574. 72	A	30r	0.00	7.84	1½-1½	(4)	2370. 77	A	100r	2. 30	7. 51	1½-2½	4p ³ ^P° - 5s' ^D
1562. 95	A	10	0.00	7.90	1½-0½		2344. 03	A	50	2. 25	7. 51	0½-1½	(17)
							2369. 67	A	80r	2. 30	7. 51	1½-1½	
Air							2266. 70	A	25	2. 30	7. 75	1½-2½	4p ³ ^P° - 4d ^P
2381. 18	A	150r	1. 35	6.53	2½-2½	4p ³ ^D° - 5s ^P	2205. 97	A	15	2. 25	7. 84	0½-1½	(18)
2437. 23	A	50	1. 31	6.37	1½-1½	(5)	2228. 66	A	20	2. 30	7. 84	1½-1½	
2456. 53	A	200r	1. 35	6.37	2½-1½		2182. 94	A	20	2. 25	7. 90	0½-0½	
2492. 91	A	50	1. 31	6.26	1½-0½		2205. 16	A	10	2. 30	7. 90	1½-0½	
2363. 05	A	10	1. 31	6.53	1½-2½		2089. 74	A	6	2. 30	8. 21	1½-1½	4p ³ ^P° - 4d ^P
							2176. 26	A	5	2. 25	7. 92	0½-0½	(19)
2288. 12	A	500R	1. 35	6.74	2½-1½	4p ³ ^D° - 5s ^P	2198. 34	A	5	2. 30	7. 92	1½-0½	
2349. 84	A	500R	1. 31	6.56	1½-0½	(6)	2069. 78	A	30	2. 25	8. 21	0½-1½	
2271. 36	A	50	1. 31	6.74	1½-1½		2165. 52	A	150	2. 30	8. 00	1½-1½	4p ³ ^P° - 4p ⁴ ^P
2003. 34	A	300r	1. 35	7.51	2½-2½	4p ³ ^D° - 5s' ^D	2112. 99	A	100	2. 25	8. 09	0½-0½	(20)
Vac						(7)	2133. 80	A	50	2. 30	8. 09	1½-0½	
1990. 35	A	200r	1. 31	7.51	1½-1½		2144. 08	A	100	2. 25	8. 00	0½-1½	
Air							2085. 25	A	30	2. 30	8. 22	1½-0½	4p ³ ^P° - 4p ⁴ ^S
2002. 54	A	20	1. 35	7.51	2½-1½		2065. 36	A	50	2. 25	8. 22	0½-0½	(21)
Vac							2010. 04	A	20	2. 25	8. 38	0½-1½	4p ³ ^P° - 6s ^P†
1991. 13	A	100r	1. 31	7.51	1½-2½		2047. 57	A	50	2. 25	8. 27	0½-0½	(22)
							2067. 11	A	20	2. 30	8. 27	1½-0½	
1873. 02	A	40	1. 31	7.90	1½-0½	4p ³ ^D° - 4d ^P†	2009. 19	A	100r	2. 30	8. 44	1½-2½	4p ³ ^P° - 4p ⁴ ^D
1917. 21	A	20	1. 31	7.75	1½-2½	(8)	Vac						(23)
1791. 77	A	40	1. 35	8.24	2½-2½	4p ³ ^D° - 4d ^D	1995. 43	A	100r	2. 25	8. 43	0½-1½	
1860. 46	A	80	1. 31	7.94	1½-1½	(9)	Air						
1871. 68	A	30	1. 35	7.94	2½-1½		2013. 32	A	100	2. 30	8. 43	1½-1½	
1781. 48	A	50	1. 31	8.24	1½-2½								
1789. 85	A	50	1. 35	8.24	2½-3½	4p ³ ^D° - 4d ^F	Vac						
1850. 24	A	40	1. 31	7.98	1½-2½	(10)	1958. 91	A	40r	2. 30	8. 60	1½-1½	4p ³ ^P° - 6s ^P†
							1994. 88	A	20	2. 25	8. 43	0½-0½	(24)
1855. 39	A	10	1. 35	8.00	2½-1½	4p ³ ^D° - 4p ⁴ ^P†	2012. 76	A	15	2. 30	8. 43	1½-0½	
1844. 36	A	40	1. 31	8.00	1½-1½	(11)							
*1739. 49	A	60	1. 35	8.44	2½-2½	4p ³ ^D° - 4p ⁴ ^D	1860. 40	A	80	2. 30	8. 94	1½-0½	4p ³ ^P° - 5s'' ^S
1732. 86	A	30	1. 31	8.43	1½-1½	(12)	1814. 57	A	40	2. 25	8. 94	0½-0½	(25)
1742. 59	A	10	1. 35	8.43	2½-1½								
1729. 80	A	30	1. 31	8.44	1½-2½		1780. 52	A	50	2. 30	9. 24	1½-1½	4p ³ ^P° - 4d'' ^D
1701. 22	A	30	1. 35	8.60	2½-1½	4p ³ ^D° - 6s ^P							(26)
1732. 44	A	30	1. 31	8.43	1½-0½	(13)							

As II

I P 20.1 Anal C List C January 1951

REFERENCE

A A. S. Rao, Ind. J. Phys. 7, 561 (1932). W L, I, T

As II

As II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac							Vac						
1394.61	A	4	0.31	9.17	2-3	$4p^2 \ ^3P - 4p^2 \ ^3D^o$ (1)	1369.78	A	5	1.25	10.26	2-1	$4p^2 \ ^1D - 4p^2 \ ^1P^o$ (5)
1373.65	A	4	0.13	9.12	1-2		1094.20	A	6	1.25	12.53	2-1	$4p^2 \ ^1D - 4d \ ^1P^o$ (6)
1356.02	A	3	0.00	9.10	0-1		1082.40	A	10	1.25	12.65	2-2	$4p^2 \ ^1D - 4d \ ^1D^o$ (7)
1266.36†	A	10	0.31	10.06	2-2	$4p^2 \ ^3P - 5s \ ^3P^o$ (2)	1002.27	A	8	1.25	13.56	2-3	$4p^2 \ ^1D - 4d \ ^1F^o$ (8)
1281.01	A	8	0.13	9.77	1-1		1660.60	A	8	2.79	10.22	0-1	$4p^2 \ ^1S - 5s \ ^1P^o$ (9)
1305.72	A	10	0.31	9.77	2-1		1267.61	A	10	2.79	12.53	0-1	$4p^2 \ ^1S - 4d \ ^1D^o$ (10)
1287.57	A	9	0.13	9.72	1-0								
1243.09	A	8	0.13	10.06	1-2								
1263.78	A	10	0.00	9.77	0-1								
1021.96	A	10	0.31	12.39	2-3	$4p^2 \ ^3P - 4d \ ^3D^o$ (3)							
1015.38	A	10	0.13	12.29	1-2								
1009.44	A	8	0.00	12.23	0-1								
1030.84	A	2	0.31	12.29	2-2								
1020.39	A	6	0.13	12.23	1-1								
1375.07	A	10	1.25	10.22	2-1	$4p^2 \ ^1D - 5s \ ^1P^o$ (4)							

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I P 9.71 Anal B List C October 1950

REFERENCE

A J. E. Ruedy and R. C. Gibbs, Phys. Rev. 46, 880 (1934). W L, I, T

Se I

Se I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2074.793 2164.160	A A	50 50	0.00 0.25	5.95 5.95	2-2 1-2	4p ⁴ 3P-5s 5S° (1)	Vac 1395.88 1435.75	A A	10 12	0.00 0.25	8.84 8.84	2-2 1-2	4p ⁴ 3P-7s 5S° (10)
Vac 1960.901 ‡ Air 2039.851 2062.788	A A	50 50 40	0.00 0.25 0.31	6.30 6.30 6.30	2-1 1-1 0-1	4p ⁴ 3P-5s 3S° (2)	1377.98 1416.84	A A	10 8	0.00 0.25	8.96 8.96	2-1 1-1	4p ⁴ 3P-5s'' 1Po (11)
Vac 1606.46 1671.15 1690.70 1617.35 1675.27 1621.21	A A A A A A	25 25 25 20 25 15	0.00 0.25 0.31 0.00 0.25 0.00	7.68 7.63 7.61 7.63 7.61 7.61	2-3 1-2 0-1 2-2 1-1 2-1	4p ⁴ 3P-5s' 3D° (3)	Air 2413.517	A	60	1.18	6.30	2-1	4p ⁴ 1D-5s 3S° (12)
1577.61 1629.06 1643.39 1577.90 1628.85	A A A A A	15 6 15 15 8	0.00 0.25 0.31 0.00 0.25	7.83 7.82 7.82 7.82 7.82	2-3 1-2 0-1 2-2 1-1	4p ⁴ 3P-4d 5D°† (4)	Vac 1898.555 1913.788 1919.190	A A A	40 35 30	1.18 1.18 1.18	7.68 7.63 7.61	2-3 2-2 2-1	4p ⁴ 1D-5s' 3D° (13)
1575.26 1626.25	A A	15 12	0.00 0.25	7.84 7.84	2-2 1-2	4p ⁴ 3P-5s' 1D° (5)	1858.84	A	25	1.18	7.82	2-2	4p ⁴ 1D-4d 5D° (14)
1530.39 1580.04 1593.19 1531.84 1579.49 1531.33	A A A A A A	25 20 15 20 15 15	0.00 0.25 0.31 0.00 0.25 0.00	8.07 8.06 8.06 8.06 8.06 8.06	2-3 1-2 0-1 2-2 1-1 2-1	4p ⁴ 3P-4d 3D° (6)	1855.20	A	30	1.18	7.84	2-2	4p ⁴ 1D-5s' 1D° (15)
1500.91 1547.12 1560.28	A A A	15 12 12	0.00 0.25 0.31	8.22 8.22 8.22	2-1 1-1 0-1	4p ⁴ 3P-6s 5S° (7)	1793.29 1795.28	A A	25 30	1.18 1.18	8.07 8.06	2-3 2-2	4p ⁴ 1D-4d 3D°† (16)
1395.43 1444.85 1404.45 1449.16 1435.28 1456.31	A A A A A A	10 10 8 15 12 12	0.00 0.25 0.00 0.25 0.25 0.31	8.85 8.79 8.79 8.76 8.85 8.79	2-2 1-1 2-1 1-0 1-2 0-1	4p ⁴ 3P-5s'' 1Po (8)	Air 2547.98	A	30	2.77	7.61	0-1	4p ⁴ 1S-5s' 3D° (20)
1405.37 1446.98 1458.29 1406.60 1446.78 1406.37	A A A A A A	10 10 8 10 10 10	0.00 0.25 0.31 0.00 0.25 0.00	8.78 8.78 8.78 8.78 8.78 8.78	2-3 1-2 0-1 2-2 1-1 2-1	4p ⁴ 3P-5d 3D° (9)	2332.81 Vac 1995.11	A A	15 15	2.77	8.06 8.96	0-1 0-1	4p ⁴ 1S-4d 3D° (21)
1405.37 1446.98 1458.29 1406.60 1446.78 1406.37	A A A A A A	10 10 8 10 10 10	0.00 0.25 0.31 0.00 0.25 0.00	8.78 8.78 8.78 8.78 8.78 8.78	2-3 1-2 0-1 2-2 1-1 2-1	4p ⁴ 3P-5d 3D° (9)						4p ⁴ 1S-5s'' 1Po (22)	

Se II

IP 21.4 Anal B List C January 1952

REFERENCE

A D. C. Martin, Phys. Rev. 48, 938 (1935). W L, I, T, IP

Se II

Se II

IA	Ref	Int	EP		J	Multiplet (No)	IA	Ref	Int	EP		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1192. 29†	A	10	0. 00	10. 35	1½-2½	4p ³ 4S° - 4p ⁴ 4P	912. 89	A	9	1. 70	15. 22	2½-1½	4p ³ 2D° - 17†
1168. 53	A	8	0. 00	10. 56	1½-1½	(1)							(12)
1156. 91	A	8	0. 00	10. 67	1½-0½								
1013. 40	A	9	0. 00	12. 18	1½-2½	4p ³ 4S° - 5s 4P	832. 74	A	9	1. 70	16. 53	2½-2½	4p ³ 2D° - 24
1033. 60	A	10	0. 00	11. 94	1½-1½	(2)	828. 48	A	8	1. 63	16. 53	1½-2½	(13)
1049. 65	A	10	0. 00	11. 76	1½-0½								
983. 94	A	6	0. 00	12. 55	1½-2½	4p ³ 4S° - 5	1290. 97	A	8	2. 95	12. 51	1½-1½	4p ³ 2P° - 5s 2P†
						(3)	1318. 25	A	7	2. 84	12. 21	0½-0½	(14)
906. 63	A	8	0. 00	13. 62	1½-2½	4p ³ 4S° - 11	1308. 99	A	8	2. 95	12. 38	1½-1½	4p ³ 2P° - 4p ¹ 2P
						(4)	1294. 41	A	3	2. 84	12. 38	0½-1½	(15)
726. 41	A	0	0. 00	17. 00	1½-2½	4p ³ 4S° - 6s 4P	1234. 88	A	7	2. 95	12. 95	1½-1½	4p ³ 2P° - 7
737. 30	A	0	0. 00	16. 74	1½-1½	(5)	1221. 94	A	2	2. 84	12. 95	0½-1½	(16)
746. 02	A	0	0. 00	16. 55	1½-0½								
709. 57	A	7	0. 00	17. 40	1½-2½	4p ³ 4S° - 30	1218. 27	A	2	2. 95	13. 08	1½-0½	4p ³ 2P° - 9
						(6)	1205. 69	A	7	2. 84	13. 08	0½-0½	(17)
1141. 94	A	9	1. 70	12. 51	2½-1½	4p ³ 2D° - 5s 2P†	Air						
1166. 53	A	5	1. 63	12. 21	1½-0½	(7)	2895. 88	A	6	10. 35	14. 62	2½-2½	4p ⁴ 4P - 5p 4Po
1155. 99	A	7	1. 70	12. 38	2½-1½	4p ³ 2D° - 4p ⁴ 2P	3204. 58	A	5	10. 56	14. 42	1½-1½	
						(8)	3038. 66	A	7	10. 35	14. 42	2½-1½	
1097. 82	A	8	1. 70	12. 95	2½-1½	4p ³ 2D° - 7†	3639. 40	A	2	10. 56	13. 96	1½-0½	
						(9)	3046. 24	A	4	10. 56	14. 62	1½-2½	
1057. 41	A	9	1. 70	13. 38	2½-2½	4p ³ 2D° - 5s' 2D†	3108. 54	A	3	10. 56	14. 53	1½-1½	4p ⁴ 4P - 5p 3D°
						(10)	2952. 28	A	6	10. 35	14. 53	2½-1½	
1014. 01	A	9	1. 70	13. 88	2½-1½	4p ³ 2D° - 12	2872. 08	A	2	10. 56	14. 86	1½-2½	
						(11)	2821. 52	A	5	10. 35	14. 73	2½-1½	
							2963. 91	A	6	10. 56	14. 73	1½-1½	
							3041. 31	A	7	10. 67	14. 73	0½-1½	

BROMINE, Z=35

Br I

I P 11.80 Anal A List A January 1951

REFERENCES

- A L. A. Turner, Phys. Rev. 27, 400 (1926). W L, I
 C. C. Kiess and T. L. de Bruin, Bur. Std. J. Research 4, 667, RP172 (1930). T
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IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1576.5	A	6	0.00	7.83	1½-2½	4p ⁴ 2P ^o -5s 4P (1)	1488.6‡	A	8	0.00	8.29	1½-1½	4p ⁴ 2P ^o -5s 2P (2)
1633.6	A	10	0.45	8.01	0½-1½		1531.9	A	7	0.45	8.51	0½-0½	
1540.8	A	6	0.00	8.01	1½-1½		1449.9	A	3	0.00	8.51	1½-0½	
1582.4	A	8	0.45	8.26	0½-0½		1575.0	A	9	0.45	8.29	0½-1½	
1495.3	P		0.00	8.26	1½-0½		*1317.8§§	A	6?	0.00	9.37	1½-0½	4p ⁴ 2P ^o -5s'' 2S (3)
							1384.6	A	8	0.45	9.37	0½-0½	

Br. I

I P 21.49 Anal C Lift C January 1951

REFERENCES

- A C. C. Kiess, unpublished material (1940). W L, I
 B R. Ramanadhan and K. R. Rao, Indian J. Phys. 18, 319 (1944). W L, I, T

Br II

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
1064. 76	B	(9)	0.00	11. 60	2-2	$4p^4 \ ^3P - 5s \ ^3S^o$	2709. 576	A	12	11. 60	16. 15	2-1	$5s \ ^3S^o - 5p' \ ^1P$
1101. 47	B	(1)	0.39	11. 60	1-2	(1)							(8)
1015. 54†	B	(20)	0.00	12. 16	2-1	$4p^4 \ ^3P - 5s \ ^3S^o$							
1049. 00	B	(20)	0.39	12. 16	1-1	(2)							
1058. 77	B	(5)	0.47	12. 16	0-1								
905. 99	B	(10)	0.00	13. 63	2-3	$4p^4 \ ^3P - 5s' \ ^3D^o$							
911. 72	B	(5)	0.00	13. 54	2-2	(3)							
940. 79	B	(3)	0.39	13. 51	1-1								
889. 23	B	(20)	0.00	13. 88	2-3	$4p^4 \ ^3P - 4d \ ^3D^o$							
922. 56	B	(6)	0.39	13. 77	1-2	(4)							
921. 16	B	(5)	0.47	13. 88	0-1								
896. 64	B	(10)	0.00	13. 77	2-2								
915. 26	B	(4)	0.39	13. 88	1-1								
856. 19	B	(7)	0.00	14. 42	2-1	$4p^4 \ ^3P - 5s'' \ ^1P^o$							
885. 48	B	(2)	0.47	14. 42	0-1	(5)							

984. 93	B	(10)	1. 41	13. 94	2-2	$4p^4 \ ^1D - 5s' \ ^1D^o$	2872. 538	A	85	12. 16	16. 45	1-2	$5s \ ^3S^o - 5p' \ ^3P$
						(6)	2846. 127	A	22	12. 16	16. 49	1-1	
							2848. 312	A	9	12. 16	16. 49	1-0	
948. 97	B	(20)	1. 41	14. 42	2-1	$4p^4 \ ^1D - 5s'' \ ^1P^o$							
						(7)							

KRYPTON, Z=36

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I P 13.939 Anal A List D February 1951

REFERENCES

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 W. F. Meggers, T. L. de Bruin and C. J. Humphreys, Bur. Std. J. Research 7, 643, RP364 (1931). I P, T
 W. F. Meggers and C. J. Humphreys, Bur. Std. J. Research 10, 447, RP 540 (1933). T
 See C. E. Moore, *Atomic Energy Levels*, Circ. Nat. Bur. Std. 467, Vol. II, p. 159 (1952). T

Kr I

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I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1235.819‡	A	13	0.00	9.99	0-1	4p⁶ ¹S - 5s [1½]° (1)	1001.048	A	2	0.00	12.33	0-1	4p⁶ ¹S - 6s [1½]° (6)
1164.868	A	4	0.00	10.60	0-1	4p⁶ ¹S - 5s' [0½]° (2)	951.06	A	0	0.00	12.98	0-1	4p⁶ ¹S - 6s' [0½]° (7)
1030.020	A	2	0.00	11.99	0-1	4p⁶ ¹S - 4d [0½]° (3)	963.34	A	1	0.00	12.81	0-1	4p⁶ ¹S - 5d [0½]° (8)
1003.542	A	2	0.00	12.30	0-1	4p⁶ ²S - 4d [1½]° (4)	946.52	A	1d	0.00	13.04	0-1	4p⁶ ¹S - 5d [1½]° (9)
953.42	A	1	0.00	12.95	0-1	4p⁶ ¹S - 4d' [1½]° (5)	945.45	A	1d	0.00	13.06	0-1	4p⁶ ¹S - 7s [1½]° (10)

Kr II

IP 24.47 Anal A List D January 1951

REFERENCES

- A** J. C. Boyce, Phys. Rev. **47**, 718 (1935). W L, I
B T. L. de Bruin, C. J. Humphreys, and W. F. Meggers, Bur. Std. J. Research **11**, 409, RP599 (1933).
W L, (I), T, I P

Kr II

Kr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
917. 434†	A	20	0. 00	13. 46	1½-0½	4p⁸ ²P° - 4p⁸ ¹S	782. 084	A	25	0. 00	15. 78	1½-2½	4p⁸ ²P° - 5s' ³D
964. 962	A	30	0. 66	13. 46	0½-0½	(1)	818. 147	A	25	0. 66	15. 75	0½-1½	(6)
*886. 302	A	30	0. 00	13. 93	1½-2½	4p⁸ ²P° - 5s' ⁴P	*783. 715	A	20	0. 00	15. 75	1½-1½	
911. 384	A	25	0. 66	14. 21	0½-1½	(2)	761. 050	A	18	0. 00	16. 22	1½-2½	4p⁸ ²P° - 4d ⁴P
868. 869	A	25	0. 00	14. 21	1½-1½		796. 678	A	6	0. 66	16. 16	0½-1½	(7)
890. 982	A	20	0. 66	14. 52	0½-0½		763. 976	A	11	0. 00	16. 16	1½-1½	
850. 318	A	6	0. 00	14. 52	1½-0½		799. 083	A	9	0. 66	16. 11	0½-0½	
844. 058	A	25	0. 00	14. 63	1½-1½	4p⁸ ²P° - 5s' ⁴P	766. 202	A	9	0. 00	16. 11	1½-0½	
*864. 812	A	20	0. 66	14. 94	0½-0½	(3)	743. 122	A	9	0. 00	16. 61	1½-2½	4p⁸ ²P° - 4d ³D
*826. 432	A	22	0. 00	14. 94	1½-0½		*783. 715	A	20	0. 66	16. 41	0½-1½	(8)
884. 144	A	30	0. 66	14. 63	0½-1½		752. 051	A	30	0. 00	16. 41	1½-1½	
830. 377	A	18	0. 00	14. 87	1½-2½	4p⁸ ²P° - 4d ⁴D							
*864. 812	A	20	0. 66	14. 94	0½-1½	(4)							
*826. 432	A	22	0. 00	14. 94	1½-1½		Air						
859. 040	A	20	0. 66	15. 03	0½-0½		2464. 77	B	(100 h)	15. 79	20. 80	3½-3½	4d ⁴F -2°
821. 161	A	20	0. 00	15. 03	1½-0½								(9)
771. 024	A	18	0. 00	16. 01	1½-2½	4p⁸ ²P° - 4d ⁴F	2833. 00	B	(100)	16. 42	20. 77	2½-3½	1-5f ¹F°
						(5)							(10)

RUBIDIUM, Z=37

Rb I

I P 4.159 Anal A List C March 1951

REFERENCE

A H. R. Kratz, Phys. Rev. 75, 1844 (1949). W L, T, I P

Rb I

Rb I

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2999. 725	A	-----	0.00	4.11	0½-1½	5s ¹S-20p ²P°	2982. 406	A	-----	0.00	4.14	0½-	5s ¹S-28p ²P°
2999. 776	A	-----	0.00	4.11	0½-0½	(1)							(9)
2996. 256	A	-----	0.00	4.12	0½-1½	5s ¹S-21p ²P°	2981. 278	A	-----	0.00	4.14	0½-	5s ¹S-29p ²P°
2996. 299	A	-----	0.00	4.12	0½-0½	(2)							(10)
2993. 313	A	-----	0.00	4.12	0½-1½	5s ¹S-22p ²P°	2980. 269	A	-----	0.00	4.14	0½-	5s ¹S-30p ²P°
2993. 352	A	-----	0.00	4.12	0½-0½	(3)							(11)
2990. 800	A	-----	0.00	4.13	0½-1½	5s ¹S-23p ²P°	2979. 362	A	-----	0.00	4.14	0½-	5s ¹S-31p ²P°
2990. 835	A	-----	0.00	4.13	0½-0½	(4)							(12)
2988. 634	A	-----	0.00	4.13	0½-1½	5s ¹S-24p ²P°	2978. 554	A	-----	0.00	4.14	0½-	5s ¹S-32p ²P°
2988. 665	A	-----	0.00	4.13	0½-0½	(5)							(13)
2986. 754	A	-----	0.00	4.13	0½-1½	5s ¹S-25p ²P°	2977. 819	A	-----	0.00	4.14	0½-	5s ¹S-33p ²P°
2986. 782	A	-----	0.00	4.13	0½-0½	(6)							(14)
2985. 117	A	-----	0.00	4.13	0½-1½	5s ¹S-26p ²P°	2977. 156	A	-----	0.00	4.15	0½-	5s ¹S-34p ²P°
2985. 140	A	-----	0.00	4.13	0½-0½	(7)							(15)
2983. 679	A	-----	0.00	4.14	0½-	5s ¹S-27p ²P°	2976. 555	A	-----	0.00	4.15	0½-	5s ¹S-35p ²P°
						(8)							(16)

Rb II

I P 27.4 Anal C List A May 1951

REFERENCES

A O. Laporte, G. R. Miller, and R. A. Sawyer, Phys. Rev. 38, 843 (1931). W L, I, T, I P
B O. Otsuka, See Ref. A. W L, (I)

Rb II

Rb II

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac													
741. 43‡	A	15	0.00	16.65	0-1	4p⁶ ¹S-5s [1½]º	697. 04	A	5	0.00	17.71	0-1	4p⁶ ¹S-5s' [0½]º
						(1)							(3)
711. 17	A	9	0.00	17.36	0-1	4p⁶ ¹S-4d [1½]º	2876. 73	B	(2)	15.61	19.90	1-0	4d [0½]º-5p [0½]
						(2)							(4)

STRONTIUM, Z=38

Sr I

I P 5.670 Anal A List A April 1951

REFERENCES

- A F. J. Sullivan, Univ. Pittsburgh Bull. **35**, No. 1, 1 (1938). W L, I, T
 B H. N. Russell and F. A. Saunders, Astroph. J. **61**, 38 (1925). W L, (I), T
 C F. A. Saunders, Astroph. J. **56**, 73 (1922). W L, T
 A. S. King, Mt. Wilson Contr. No. 150; Astroph. J. **48**, 22 (1918). I
 A. Fowler, *Report on Series in Line Spectra*, p. 128 (Fleetway Press, London, 1922). (I)
 H. Kayser, *Handbuch der Spektroskopie* **6**, 544 (S. Hirzel, Leipzig, 1912). (I)

Sr I

Sr I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2931. 830	A	30	0.00	4.21	0-1	5s ² 1S— 6p 1P° (1)	Air 2307. 39	C	(1u)	0.00	5.35	0-1	5s ² 1S— 10p 1P° (7)
2756. 75	B	(1)	0.00	4.48	0-1	5s ² 1S— 5p' 3D° (2)	2275. 29	C	(1u)	0.00	5.42	0-1	5s ² 1S— 11p 1P° (8)
2680. 10	B	(1)	0.00	4.61	0-1?	5s ² 1S— 5p' 3P° (3)	2253. 32	C	(1u)	0.00	5.48	0-1	5s ² 1S— 12p 1P° (9)
2569. 469	A	20	0.00	4.80	0-1	5s ² 1S— 7p 1P° (4)	2237. 65	C	(1u)	0.00	5.52	0-1	5s ² 1S— 13p 1P° (10)
2428. 095	A	(2)	0.00	5.08	0-1	5s ² 1S— 8p 1P° (5)	2226. 38	C	(1u)	0.00	5.54	0-1	5s ² 1S— 14p 1P° (11)
2354. 319	A	(1)	0.00	5.24	0-1	5s ² 1S— 9p 1P° (6)							

Sr II

I P 10.983 Anal A List A March 1951

REFERENCES

- A F. A. Saunders, E. G. Schneider, and E. Buckingham, Zeit. Phys. **20**, 291 (1934). W L, T, I P
 B F. J. Sullivan, Univ. Pittsburgh Bull. **35**, No. 1, 1 (1938). W L, T
 A. Fowler, Report on Series in Line Spectra, p. 132 (Fleetway Press, London, 1922). (I)
 See H. Kayser, Handbuch der Spektroskopie **6**, 544 (S. Hirzel, Leipzig, 1912). I
 T. Lyman, Astroph. J. **35**, 352 (1912). (I)

Sr II

Sr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1783.97 1793.10	A A	-----	0.00 0.00	6.92 6.88	0½-1½ 0½-0½	5s ²S - 6p ³P° (1)	Air 2471.597 2423.569	B B	2 1	3.03 2.93	8.02 8.02	1½-0½ 0½-0½	5p ³P° - 7s ²S (8)
Air 2425.17 2425.62	A A	-----	1.83 1.80	6.92 6.88	2½-1½ 1½-0½	4d ²D - 6p ³P° (2)	2322.355 2281.999 2324.52	B B A	2 2 1	3.03 2.93 3.03	8.34 8.34 8.34	1½-2½ 0½-1½ 1½-1½	5p ³P° - 6d ²D (9)
2165.93 2152.84	A A	3R 2	1.83 1.80	7.53 7.53	2½-3½ 1½-2½	4d ²D - 4f ³F° (3)	2051.88 2018.66	A A	1u 0u	3.03 2.93	9.04 9.04	1½-0½ 0½-0½	5p ³P° - 8s ²S (10)
Vac 1778.39 1769.63	A A	(9) (8)	1.83 1.80	8.77 8.77	2½-3½ 1½-2½	4d ²D - 5f ⁴F° (4)	Vac 1995.00 1964.43 1995.78	A A A	0u 0u -----	3.03 2.93 3.03	9.21 9.21 9.21	1½-2½ 0½-1½ 1½-1½	5p ³P° - 7d ²D (11)
1620.35 1612.98	A A	(5) (4)	1.83 1.80	9.45 9.45	2½-3½ 1½-2½	4d ²D - 6f ³F° (5)	1874.90 1846.76	A A	----- -----	3.03 2.93	9.61 9.61	1½-0½ 0½-0½	5p ³P° - 9s ²S (12)
1537.91 1531.28	A A	(1) (1)	1.83 1.80	9.86 9.86	2½-3½ 1½-2½	4d ²D - 7f ⁴F° (6)	1845.45 1819.01	A A	----- -----	3.03 2.93	9.72 9.71	1½-2½ 0½-1½	5p ³P° - 8d ²D (13)
1488.99 1482.69	A A	----- -----	1.83 1.80	10.12 10.12	2½-3½ 1½-2½	4d ²D - 8f ⁵F° (7)	1762.81	A	-----	3.03	10.03	1½-1½	5p ³P° - 9d ²D (14)

YTTRIUM, Z=39

Y I

IP 6.5 Anal A List A May 1951

REFERENCES

- A W. F. Meggers—See W. F. Meggers and H. N. Russell, Bur. Std. J. Research 2, 745, RP55 (1929). W L, (I), T, I P
 B J. M. Eder—See Ref. A. W L, (I)
 A. S. King and E. Carter, Mt. Wilson Contr. No. 326; Astrophys. J. 65, 86 (1927). I

Y I

Y I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2964. 96	A	30	0.07	4.23	2½-2½	$a^3D - z^3D^\circ$ (1)	2634. 32	B	(1)	0.07	4.75	2½-3½	$a^3D - y^3G^\circ$ (8)
2948. 39	A	30	0.00	4.19	1½-1½								
2995. 26	A	10	0.07	4.19	2½-1½								
2909. 05	A	20	0.00	4.23	1½-2½								
2813. 64	B	8	0.07	4.45	2½-2½	$a^3D - x^4D^\circ \dagger$ (2)	2490. 4	A	(1)	0.07	5.02	2½-2½	$a^3D - v^3D^\circ$ (9)
2807. 66	B	1	0.07	4.46	2½-1½		2460. 11	B	(1)	0.00	5.02	1½-1½	
2791. 20	B	(1)	0.00	4.42	1½-0½		2457. 93	B	(½)	0.00	5.02	1½-2½	
2742. 55	B	(3)	0.00	4.50	1½-1½	$a^3D - w^3D^\circ$ (3)	2354. 20	B	(3)	0.07	5.31	2½-3½	$a^3D - g^3F^\circ$ (10)
*2730. 06	B	(1)	0.00	4.52	1½-2½		2332. 58	B	(2)	0.00	5.29	1½-2½	
2760. 10	B	(3)	0.07	4.54	2½-1½	$a^3D - z^4S^\circ$ (4)	2361. 81	B	(2)	0.07	5.29	2½-2½	
2705. 85	B	(1)	0.07	4.63	2½-2½	$a^3D - y^4P^\circ$ (5)	2929. 00	A	(1)	1.30	5.51	0½-0½	$z^3P^\circ - h^4D$ (11)
*2730. 06	B	(1)	0.07	4.59	2½-1½		2901. 48	B	6	1.30	5.55	0½-	$z^3P^\circ - 2$ (12)
2723. 00	B	(3)	0.07	4.60	2½-1½	$a^3D - w^3P^\circ$ (6)	2886. 49	B	15	1.40	5.68	1½-1½	$z^3P^\circ - f^3P$ (13)
2681. 65	B	(1)	0.00	4.60	1½-0½		2822. 56	B	10	1.30	5.67	0½-0½	
2684. 20	B	(½)	0.00	4.60	1½-1½		2890. 40	B	3	1.40	5.67	1½-0½	
2695. 40	B	(1)	0.07	4.64	2½-3½	$a^3D - w^3F^\circ$ (7)	2818. 87	B	3	1.30	5.68	0½-1½	
2672. 08	B	(1)	0.00	4.62	1½-2½								

Y II

IP 12.3 Anal A List A May 1951

REFERENCES

- A W. F. Meggers and H. N. Russell, Bur. Std. J. Research 2, 737 RP55 (1929). W L, I, T, I P
 B J. R. McNally, Jr. and G. R. Harrison, J. Opt. Soc. Am. 35, 584 (1945). W L, T

Y II

Y II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2243.06	A	50	0.00	5.50	0-1	$a^1S - g^1P^o$ (1)	2750.40	A	3h	3.23	7.72	2-2	$z^1D^o - g^1D$ (13)
2422.22	A	50	0.41	5.50	2-1	$a^1D - g^1P^o$ (2)	2564.3	A	1	3.23	8.04	2-1	$z^1D^o - g^1L$ (14)
2974.02	A	5h	3.04	7.19	2-1	$z^3P^o - e^1S$ (3)	2268.14	A	2h	3.23	8.67	2-2	$z^1D^o - h^1D$ (15)
2898.93	A	3	2.94	7.19	1-1								
2871.4	A	1h	2.89	7.19	0-1								
2950.33	A	1h	3.04	7.23	2-3	$z^3P^o - e^1F$ (4)	2980.69	B	20h	3.51	7.65	4-4	$z^3F^o - e^1F$ (16)
2482.5	A	1	2.94	7.28	1-2	$z^3P^o - f^1D$ (5)	2930.15	A	6h	3.40	7.61	3-3	
2854.45	A	15	3.04	7.37	2-2	$z^3P^o - e^1P$ (6)	3006.0	A	2h	3.51	7.61	4-3	
2826.38	A	5	2.94	7.30	1-1		2957.39	A	2h	3.40	7.57	3-2	
2897.70	A	5	3.04	7.30	2-1								
2856.32	A	6	2.94	7.26	1-0								
2785.23	A	3	2.94	7.37	1-2								
2800.11	A	4	2.89	7.30	0-1								
2785.60	A	2	3.04	7.47	2-2	$z^3P^o - f^1D$ (7)	2956.04	A	5h	3.40	7.57	1-2	$z^1P^o - e^1F$ (18)
2734.98	A	4h	3.04	7.56	2-1	$z^3P^o - f^1S$ (8)	2953.28	A	3h	3.40	7.58	1-0	$z^1P^o - f^1S$ (19)
2460.62	A	20	3.04	8.06	2-3	$z^3P^o - g^1D$ (9)	2858.06	A	4h	3.40	7.72	1-2	$z^1P^o - g^1D$ (20)
2413.92	A	3h	2.94	8.05	1-2		2340.8	A	10h	3.40	8.67	1-2	$z^1P^o - h^1D$ (21)
2398.14	A	10h	2.89	8.04	0-1								
2465.90	A	5h	3.04	8.05	2-2								
2417.29	B	5h	2.94	8.04	1-1								
2982.20	A	2	3.23	7.37	2-2	$z^1D^o - e^1P$ (10)	2948.98	A	3h	3.53	7.72	1-2	$z^1D^o - g^1D$ (22)
2907.18	A	2	3.23	7.47	2-2	$z^1D^o - f^1D$ (11)	2825.37	A	3h	3.61	7.97	3-2	
2840.98	A	5h	3.23	7.57	2-2	$z^1D^o - e^1F$ (12)	2813.61	A	4h	3.55	7.93	2-1	$z^1D^o - f^1P$ (23)

Y III

I P 20.4 Anal C List A March 1951

REFERENCES

- A W. F. Meggers and H. N. Russell, Bur. Std. J. Research **2**, 735, RP55 (1929). W L, I, T, I P
 B I. S. Bowen and R. A. Millikan, Phys. Rev. **28**, 923 (1926). W L, (I), T, I P

Y III

Y III

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2367.25	A	200	0.09	5.30	$2\frac{1}{2} - 1\frac{1}{2}$	$4d^2D - 5p^2P^o$ (1)	Air 2817.03	A	200	0.92	5.30	$0\frac{1}{2} - 1\frac{1}{2}$	$5s^2S - 5p^2P^o$ (3)
2414.68	A	100	0.00	5.11	$1\frac{1}{2} - 0\frac{1}{2}$		2945.92	A	150	0.92	5.11	$0\frac{1}{2} - 0\frac{1}{2}$	
2327.30	A	20	0.00	5.30	$1\frac{1}{2} - 1\frac{1}{2}$								
Vac 996.37	B	(2)	0.09	12.48	$2\frac{1}{2} -$	$4d^2D - 4f^2F^o$ (2)	2284.5	A	100	5.30	10.70	$1\frac{1}{2} - 0\frac{1}{2}$	$5p^2P^o - 6s^2S$ (4)
989.21	B	(1)	0.00	12.48	$1\frac{1}{2} - 2\frac{1}{2}$		2206.22	A	30	5.11	10.70	$0\frac{1}{2} - 0\frac{1}{2}$	
							2191.22	A	200	5.30	10.93	$1\frac{1}{2} - 2\frac{1}{2}$	$5p^2P^o - 5d^2D$ (5)
							2127.99	A	100	5.11	10.91	$0\frac{1}{2} - 1\frac{1}{2}$	
							2200.80	A	50	5.30	10.91	$1\frac{1}{2} - 1\frac{1}{2}$	

ZIRCONIUM, Z=40

Zr I

I P 6.92 Anal A List B May 1951

REFERENCES

A C. C. Kiess and H. K. Kiess, Bur. Std. J. Research 6, 621, RP296 (1931). W L, (I) T, I P
 A. S. King and E. Carter, Mt. Wilson Contr. No. 326; Astroph. J. 65, 92 (1927). I

Zr I

Zr I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
3029.52	A	300	0.15	4.23	4-3	<i>a</i> $^3F - u$ $^3D^o$	2725.45	A	(8)	0.15	4.68	4-4	<i>a</i> $^3F - s$ $^3F^o$
3011.73	A	250	0.07	4.17	3-2	(1)	2709.33	A	(8)	0.07	4.63	3-3	(10)
2985.36	A	200	0.00	4.13	2-1		2692.91	A	(4)	0.00	4.58	2-2	
2969.18	A	40	0.07	4.23	3-3		2759.46	A	(3)	0.15	4.63	4-3	
2960.86	A	60	0.00	4.17	2-2		2676.54	A	(4)	0.07	4.68	3-4	
2923.86	A	10	0.07	4.29	3-2	<i>a</i> $^3F - y$ $^3P^o$	2687.74	A	(7)	0.15	4.74	4-3	<i>a</i> $^3F - s$ $^3D^o$
						(2)	2647.77	A	(4)	0.07	4.73	3-2	(11)
2916.23	A	10	0.07	4.30	3-2	<i>a</i> $^3F - w$ $^1D^o$	*2612.18	A	(4)	0.00	4.72	2-1	
2868.48	A	(3)	0.00	4.30	2-2	(3)	2640.13	A	(4)	0.07	4.74	3-3	
2875.98	A	200	0.15	4.44	4-4	<i>a</i> $^3F - t$ $^3F^o$	2608.37	A	(3)	0.00	4.73	2-2	
2837.23	A	200	0.07	4.42	3-3	(4)	2635.40	A	(8)	0.15	4.84	4-4	<i>a</i> $^3F - r$ $^3F^o$
2814.91	A	150	0.00	4.38	2-2		2609.40	A	(6)	0.07	4.80	3-3	(12)
2892.26	A	30	0.15	4.42	4-3		2592.18	A	(3)	0.00	4.76	2-2	
2860.85	A	30	0.07	4.38	3-2		2655.84	A	(3)	0.15	4.80	4-3	
2821.56	A	8	0.07	4.44	3-4		2589.62	A	(5)	0.07	4.84	3-4	
2792.05	A	20	0.00	4.42	2-3		2567.44	A	(7)	0.15	4.96	4-5	<i>a</i> $^3F - u$ $^3G^o$
2857.97	A	2	0.15	4.47	4-3	<i>a</i> $^3F - t$ $^3D^o$	2539.62	A	(10)	0.07	4.93	3-4	(13)
2798.30	A	(6)	0.07	4.48	3-2	(5)	2538.00	A	(6)	0.00	4.86	2-3	
2767.38	A	(4)	0.00	4.46	2-1		2583.64	A	(6)	0.15	4.93	4-4	
2848.50	A	150	0.15	4.49	4-4	<i>a</i> $^3F - x$ $^1G^o$	2556.38	A	(6)	0.15	4.98	4-3	<i>a</i> $^3F - r$ $^3D^o$
2795.14	A	8	0.07	4.49	3-4	(6)	2550.50	A	(4)	0.07	4.91	3-2	(14)
*2827.55	A	8	0.15	4.52	4-5	<i>a</i> $^3F - x$ $^3H^o$	2403.44	A	(5)	0.15	5.29	4-5	<i>a</i> $^3F - t$ $^3G^o$
2774.03	A	(2)	0.07	4.52	3-4	(7)	2397.23	A	(7)	0.07	5.22	3-4	(15)
							2374.43	A	(10)	0.00	5.20	2-3	
2719.52	A	(4)	0.00	4.54	2-3	<i>a</i> $^3F - w$ $^1F^o$	2407.03	A	(1)	0.07	5.20	3-3	
2763.01	A	(6)	0.15	4.62	4-5	(8)	2405.52	A	(10)	0.15	5.28	4-3	<i>a</i> $^3F - q$ $^3D^o$
2727.00	A	(5)	0.07	4.60	3-4	(9)	2388.00	A	(8)	0.07	5.24	3-2	
2706.15	A	(10)	0.00	4.56	2-3		2363.52	A	(10)	0.00	5.22	2-1	
							2367.33	A	(8)	0.07	5.28	3-3	
							2355.90	A	(7)	0.00	5.24	2-2	

Zr I—Continued

Zr I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air													
2378.25	A	(4)	0.15	5.34	4-4	a ³ F—g ³ F° (17)	2448.37	A	(4)	0.52	5.56	2-2	a ³ P—s ³ P° (24)
2341.32	A	(3)	0.07	5.34	3-3		2468.03	A	(5)	0.54	5.54	1-1	
*2340.87	A	(5)	0.00	5.27	2-2		2456.50	A	(2)	0.52	5.54	2-1	
2378.68	A	(1)	0.15	5.34	4-3		2459.84	A	(3)	0.54	5.56	1-2	
2372.57	A	(5)	0.07	5.27	3-2								
*2340.87	A	(5)	0.07	5.34	3-4		2836.49	A	4	0.63	4.98	2-3	a ¹ D—r ³ D° (25)
2310.44	A	(2)	0.00	5.34	2-3		2880.83	A	5	0.63	4.91	2-3	a ¹ D—v ¹ F° (26)
2248.05	A	(4)	0.15	5.64	4-3	a ³ F—p ³ D° (18)	2725.01	A	(2)	0.63	5.16	2-2	a ¹ D—t ³ P° (27)
2220.68	A	(5)	0.07	5.63	3-2		2786.90	A	(6)	0.63	5.06	2-1	
2201.69	A	(3)	0.00	5.61	2-1		2819.56	A	10	0.63	5.01	2-2	a ¹ D—v ¹ D° (28)
2214.63	A	(4)	0.07	5.64	3-3		2790.14	A	(12)	0.63	5.05	2-1	a ¹ D—w ¹ P° (29)
2192.89	A	(3)	0.00	5.63	2-2		2701.83	A	(3)	0.63	5.20	2-3	a ¹ D—t ³ G° (30)
2105.83	A	(5)	0.15	6.01	4-3	a ³ F—o ³ L° (19)	2136.16	A	(7)	0.63	6.41	2-1	a ¹ D—v ¹ P° (31)
2101.80	A	(5)	0.07	5.94	3-2		*2612.18	A	(4)	0.99	5.72	4-3	a ¹ G—u ¹ F° (32)
2092.88	A	(4)	0.00	5.90	2-1								
2814.71	A	(2)	0.52	4.90	2-1	a ³ P—x ³ P° (20)							
2829.80	A	8	0.54	4.90	1-1								
2815.49	A	2	0.52	4.90	0-1								
2806.77	A	12	0.52	4.91	2-3	a ³ P—v ¹ F° (21)							
2658.66	A	(6)	0.52	5.16	2-2	a ³ P—t ³ P° (22)							
2717.48	A	(5)	0.52	5.06	2-1								
*2764.68	A	(2)	0.54	5.00	1-0								
2672.17	A	(1)	0.54	5.16	1-2								
2718.28	A	(4)	0.52	5.06	0-1								
2563.56	A	(4)	0.52	5.33	2-1	a ³ P—w ³ S° (23)							
2576.08	A	(5)	0.54	5.33	1-1								
2564.26	A	(3)	0.52	5.33	0-1								

Strongest Unclassified Lines of Zr I

Air							Air						
2793.40	A	8					2285.25	A	(6)				
2737.86	A	(5)					2269.43	A	(5)				
2630.33	A	(6)					2230.88	A	(5)				
2620.83	A	(5)					2214.20	A	(5)				
2579.54	A	(8)					2178.97	A	(5)				
2554.30	A	(5)					2157.78	A	(5)				
2495.26	A	(5)					2149.15	A	(6)				
2441.30	A	(8)					2119.14	A	(6)				
2400.81	A	(5)					2110.53	A	(7)				
2389.21	A	(8)					2108.56	A	(6)				
2384.16	A	(12)					2103.31	A	(5)				
2380.55	A	(9)					2089.57	A	(5)				

Zr II

I P 13.97 Anal A List B April 1951

REFERENCES

- A C. C. Kiess and H. K. Kiess, Bur. Std. J. Research 5, 1205, RP255 (1930). I P, W L, I; T
 B R. J. Lang, See Ref. A

Zr II

Zr II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
2952.23	A	6	0.16	4.34	4½-4½	a 4F-z 4G°	2937.74	A	4	0.46	4.66	4½-3½	b 4F-y 4F°
2964.55	A	4	0.09	4.26	3½-3½	(1)	2936.31	A	12	0.41	4.61	3½-2½	(11)
2904.22	A	1	0.09	4.34	3½-4½		2898.72	A	7	0.41	4.66	3½-3½	
2925.62	A	4	0.04	4.26	2½-3½		2901.81	A	3	0.36	4.61	2½-2½	
2808.15	A	3	0.04	4.43	2½-1½	a 4F-z 4P°	2865.09	A	3	0.36	4.66	2½-3½	
2761.89	A	6	0.00	4.47	1½-0½	(2)	2740.33	A	6	0.46	4.97	4½-3½	b 4F-x 4D°
2783.56	A	5	0.00	4.43	1½-1½		2750.95	A	4	0.41	4.89	3½-2½	(12)
2722.62	A	25	0.16	4.70	4½-3½	a 4F-y 4D°	2754.23	A	2	0.36	4.84	2½-1½	
2745.86	A	20	0.09	4.59	3½-2½	(3)	2706.38	A	4	0.41	4.97	3½-3½	
2752.21	A	20	0.04	4.52	2½-1½		2729.93	A	3	0.32	4.84	1½-1½	
2758.80	A	20	0.00	4.47	1½-0½		2604.99	A	2	0.41	5.15	3½-2½	b 4F-x 4D°
2681.75	A	5	0.09	4.70	3½-3½		2501.38	A	1b	0.36	5.29	2½-2½	(13)
2712.38	A	10	0.04	4.59	2½-2½		2481.35	A	5	0.32	5.29	1½-2½	b 4F-x 4F°
2728.56	A	2	0.00	4.52	1½-1½		2678.59	A	25	0.16	4.77	4½-4½	(14)
*2689.47	A	6	0.00	4.59	1½-2½	a 4F-y 4F°	2480.16	A	2	0.36	5.33	2½-2½	b 4F-y 4P°
2726.48	A	15	0.09	4.62	3½-3½	(4)	2363.84	A	4	0.36	5.58	2½-2½	(15)
2734.84	A	20	0.04	4.55	2½-2½		2353.21	A	6	0.32	5.56	1½-1½	b 4F-w 4D°
2742.54	A	20	0.00	4.50	1½-1½		2345.93	A	1	0.32	5.58	1½-2½	(16)
2768.73	A	15	0.16	4.62	4½-3½		2206.31	A	4b	0.32	5.91	1½-2½	b 4F-w 4F°
2768.84	A	15	0.09	4.55	3½-2½		2741.54	A	8	0.16	4.66	4½-3½	(17)
2766.41	A	1	0.04	4.50	2½-1½	a 4F-y 4F°	2732.72	A	15	0.09	4.61	3½-2½	
2639.07	A	12	0.09	4.77	3½-4½	(5)	2700.12	A	18	0.09	4.66	3½-3½	a 4D-x 4D°
2693.52	A	9	0.04	4.62	2½-3½		2699.59	A	6	0.04	4.61	2½-2½	(18)
2711.48	A	12	0.00	4.55	1½-2½		2667.77	A	12	0.04	4.66	2½-3½	
2650.37	A	12	0.09	4.75	3½-2½	a 4F-z 4P°	2797.78	A	3b	0.56	4.97	2½-3½?	
2643.40	A	6	0.04	4.71	2½-1½	(6)	2824.56	A	2b	0.52	4.89	1½-2½?	
2626.41	A	4	0.00	4.70	1½-0½		*2882.08	A	5	0.56	4.84	2½-1½	
2619.20	A	3	0.04	4.75	2½-2½		2714.22	A	10	0.56	5.10	2½-1½	a 4D-y 4P°
2621.60	A	3	0.00	4.71	1½-1½		2740.49	A	8	0.52	5.03	1½-0½	(19)
2568.85	A	40	0.16	4.97	4½-3½	a 4F-x 4D°	2695.42	A	8	0.52	5.10	1½-1½	
*2571.42	A	50	0.09	4.89	3½-2½	(7)	*2689.47	A	6	0.56	5.15	2½-2½	a 4D-x 4D°
2567.62	A	20	0.00	4.81	1½-0½		2704.66	A	4	0.56	5.12	2½-1½	(20)
2532.47	A	20	0.09	4.97	3½-3½		2670.94	A	10	0.52	5.15	1½-2½	
2542.09	A	18	0.04	4.89	2½-2½		2630.91	A	15	0.56	5.25	2½-3½	a 4D-x 4F°
2550.71	A	18	0.00	4.84	1½-1½		2589.02	A	15	0.52	5.29	1½-2½	(21)
2503.98	A	4	0.04	4.97	2½-3½		2583.38	A	15	0.56	5.33	2½-2½	a 4D-y 4P°
2521.90	A	5	0.00	4.89	1½-2½		2586.85	A	4	0.52	5.30	1½-1½	(22)
2436.94	A	1	0.04	5.10	2½-1½	a 4F-y 4P°	2604.19	A	3	0.56	5.30	2½-1½	
2454.61	A	4	0.00	5.03	1½-0½	(8)	2457.43	A	20	0.56	5.58	2½-2½	a 4D-w 4D°
2915.98	A	15	0.46	4.70	4½-3½	b 4F-y 4D°	2449.83	A	20	0.52	5.56	1½-1½	(23)
2951.46	A	10	0.41	4.59	3½-2½	(9)	2465.37	A	8	0.56	5.56	2½-1½	
2962.69	A	12	0.36	4.52	2½-1½		2441.97	A	12	0.52	5.58	1½-2½	
2969.63	A	8	0.32	4.47	1½-0½		2434.55	A	8	0.56	5.63	2½-1½	a 4D-x 4P°
2877.56	A	10	0.41	4.70	3½-3½		2397.57	A	5	0.52	5.67	1½-0½	(24)
2916.63	A	7	0.36	4.59	2½-2½		2419.37	A	10	0.52	5.63	1½-1½	
2934.62	A	12	0.32	4.52	1½-1½		2280.36	A	5	0.56	5.97	2½-3½	a 4D-w 4F°
2889.41	A	5	0.32	4.59	1½-2½		*2291.15	A	15	0.52	5.91	1½-2½	(25)
2865.61	A	5	0.46	4.77	4½-4½	b 4F-y 4F°	2068.09	A	3	0.52	6.49	1½-0½	a 4D-w 4P°
2929.10	A	1	0.41	4.62	3½-3½	(10)	Vac						(26)
2968.95	A	12	0.46	4.62	4½-3½		1920.76	B	5	0.56	6.98	2½-2½	a 4D-v 4D°
2978.07	A	12	0.41	4.55	3½-2½		1938.27	A	3	0.52	6.89	1½-1½	(27)
2979.18	A	12	0.36	4.50	2½-1½		1948.10	A	1	0.56	6.89	2½-1½	
2894.78	A	1	0.36	4.62	2½-3½		1911.32	B	4	0.52	6.98	1½-2½	

Zr II—Continued

Zr II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1878.53 1893.52 1902.78	B B B	4 1 3	0.56 0.52 0.56	7.13 7.04 7.04	2½-3½ 1½-2½ 2½-2½	a ³D-v ³F° (28)	Air 2973.69 2945.45 2944.19	A A A	2 4 3	0.99 0.96 0.93	5.15 5.15 5.12	2½-2½ 1½-2½ 0½-1½	a ⁴P-x ³D° (45)
Air 2838.00 2856.05 2888.04 *2807.13	A A A A	5 5 5 3b	0.75 0.71 0.75 0.71	5.10 5.03 5.03 5.10	1½-1½ 0½-0½ 1½-0½ 0½-1½	a ³P-y ³P° (29)	2902.24 2846.16 2872.52	A A A	2 2 6	0.99 0.96 0.99	5.25 5.29 5.29	2½-3½ 1½-2½ 2½-2½	a ⁴P-x ³F° (46)
2810.91 2796.92 2827.52	A A A	15 10 3	0.75 0.71 0.75	5.15 5.12 5.12	1½-2½ 0½-1½ 1½-1½	a ³P-x ³D° (30)	2869.80 2851.98 2818.76 2825.54	A A A A	12 12 20 15	0.99 0.96 0.96 0.93	5.30 5.28 5.33 5.30	2½-1½ 1½-0½ 1½-2½ 0½-1½	
2720.36	A	5	0.75	5.29	1½-2½	a ³P-x ³F° (31)	2692.60 *2669.48	A A	6 8	0.99 0.96	5.58 5.58	2½-2½ 1½-2½	a ⁴P-w ³D° (48)
2558.36 2567.05	A A	1b 7	0.75 0.75	5.58 5.56	1½-2½ 1½-1½	a ³P-w ³D° (32)	2665.19 2642.51 2601.27	A A A	3 2 3	0.99 0.96 0.93	5.63 5.63 5.67	2½-1½ 1½-1½ 0½-0½	a ⁴P-x ³P° (49)
2533.65 2485.60 2509.77 2509.01	A A A A	4 3 3 2	0.75 0.71 0.75 0.71	5.63 5.67 5.67 5.63	1½-1½ 0½-0½ 1½-0½ 0½-1½	a ³P-x ³P° (33)	2626.98 2214.59	A A	3 2	0.93 0.96	5.63 6.53	0½-1½ 1½-1½	a ⁴P-w ³P° (50)
2393.35	A	2	0.75	5.91	1½-2½	a ³P-w ³F° (34)	2918.24 2948.94 2976.61	A A A	18 12 10	1.01 0.97 1.01	5.24 5.15 5.15	4½-5½ 3½-4½ 4½-4½	a ³G-z ³H° (51)
2137.67 2133.28 2151.02 2120.12	A A A A	7 7 6 5	0.75 0.71 0.75 0.71	6.53 6.49 6.49 6.53	1½-1½ 0½-0½ 1½-0½ 0½-1½	a ³P-w ³P° (35)	2976.61 2910.26 2854.42 2883.79	A A A A	10 8 7 3	1.01 1.01 0.97 0.97	5.15 5.25 5.29 5.25	4½-4½ 4½-3½ 3½-2½ 3½-3½	a ³G-x ³F° (52)
2809.40	A	2	0.71	5.10	2½-1½	a ³F-y ³P° (36)	2487.28 2496.48 2467.97	A A A	20 15 2b	1.01 0.97 0.97	5.97 5.91 5.97	4½-3½ 3½-2½ 3½-3½	a ³G-w ³F° (53)
2905.22 2848.17 2907.37	A A A	15 8 6	0.80 0.71 0.80	5.05 5.04 5.04	3½-4½ 2½-3½ 3½-3½	a ³F-y ³G° (37)	2015.86 2030.73 2003.18	A A A	5 6 0	1.01 0.97 0.97	7.13 7.04 7.13	4½-3½ 3½-2½ 3½-3½	a ³G-v ³F° (54)
2839.34 2799.16 2782.84	A A A	10 8 2	0.80 0.71 0.71	5.15 5.12 5.15	3½-2½ 2½-1½ 2½-2½	a ³F-x ³D° (38)	2184.80	A	5b	1.48	7.13	4½-3½	a ³H-v ³F° (55)
2834.38	A	5	0.80	5.15	3½-4½	a ³F-z ³H° (39)							
2774.15 2694.05	A A	12 10	0.80 0.71	5.25 5.29	3½-3½ 2½-2½	a ³F-x ³F° (40)	2924.63 2901.60	A A	8 5	1.75 1.66	5.97 5.91	2½-3½ 1½-2½	b ²D-w ²F° (56)
2721.37 *2669.48	A A	2 8	0.80 0.71	5.33 5.33	3½-2½ 2½-2½	a ³F-y ³P° (41)	2553.06	A	2	1.66	6.49	1½-0½	b ²D-w ²P° (57)
2543.66 *2535.15	A A	1 5	0.71 0.71	5.56 5.58	2½-1½ 2½-2½	a ³F-w ³D° (42)	*2357.45 2398.97 2317.27	A A A	25 5 15	{ 1.75 1.66 1.66	6.98 6.89 6.98	2½-2½ 1½-1½ 2½-1½	b ²D-v ²D° (58)
2387.17 2372.92 2413.85 2347.13	A A A A	15 12 3 4	0.80 0.71 0.80 0.71	5.97 5.91 5.91 5.97	3½-3½ 2½-2½ 3½-2½ 2½-3½	a ³F-w ³F° (43)	2294.08 *2291.15 2330.38	A A A	12 15 18	1.75 1.66 1.75	7.13 7.04 7.04	2½-3½ 1½-2½ 2½-2½	b ²D-v ²F° (59)
Vac 1995.88 1996.69	A A	7 6	0.80 0.71	6.98 6.89	3½-2½ 2½-1½	a ³F-v ³D° (44)	2095.80 2109.66 2063.89	A A A	15 12 6	1.75 1.66 1.66	7.64 7.51 7.64	2½-1½ 1½-0½ 1½-1½	b ²D-v ²P° (60)

Zr II—Continued

Zr II—Continued

IA	Ref	Int	E P		J	Multiplet (No)	IA	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2926. 99 2955. 77	A A	25 20	1. 75 1. 74	5. 97 5. 91	4½-3½ 3½-2½	b ²G-v ²F° (61)	Air 2025. 33 2001. 80	A A	6 4	3. 80 3. 68	9. 79 9. 78	5½-6½ 4½-5½	z ⁴G°-e ⁴H (76)
2351. 69	A	12	1. 74	6. 98	3½-2½	b ²G-v ²D° (62)	Vac 1976. 54	A	3	3. 45	9. 70	2½-3½	
2295. 53 2324. 77 2288. 63	A A A	10 15 2	1. 75 1. 74 1. 74	7. 13 7. 04 7. 13	4½-3½ 3½-2½ 3½-3½	b ²G-v ²F° (63)	Air 2065. 35 2039. 84 2012. 66	A A A	3 1 0	3. 80 3. 68 3. 57	9. 78 9. 73 9. 70	5½-5½ 4½-4½ 3½-3½	
2389. 52 2406. 83 2432. 26 2364. 95	A A A A	8 7 3 2	1. 82 1. 77 1. 82 1. 77	6. 98 6. 89 6. 89 6. 98	2½-2½ 1½-1½ 2½-1½ 1½-2½	c ²D-v ²D° (64)	2805. 71 2748. 89 2581. 71	A A A	2b 2 2	3. 77 3. 64	8. 17 8. 13	3½-3½ 2½-2½	z ²F°-e ²F (77)
2324. 48 2337. 76 2361. 76	A A A	5 1 10	1. 82 1. 77 1. 82	7. 13 7. 04 7. 04	2½-3½ 1½-2½ 2½-2½	c ²D-v ²F° (65)	2275. 39 2254. 20 2221. 91	A A A	3b 3b 1b	3. 77 3. 64 3. 64	9. 20 9. 12 9. 20	3½-3½ 2½-2½ 2½-3½	z ²F°-f ²F (79)
2618. 89 2615. 59	A A	2 4	2. 27 2. 17	6. 98 6. 89	2½-2½ 1½-1½	d ²D-v ²D° (66)	2235. 10 2233. 48 2231. 86 2229. 74 2199. 17	A A A A	5 5 2 1b	3. 93 3. 86 3. 77 3. 68 3. 77	9. 46 9. 38 9. 30 9. 21 9. 38	4½-4½ 3½-3½ 2½-2½ 1½-1½ 2½-3½	z ⁴F°-f ⁴F (80)
2540. 87 2534. 16	A A	3b 2b	2. 27 2. 17	7. 13 7. 04	2½-3½ 1½-2½	d ²D-v ²F° (67)							
2692. 00 2752. 57	A A	6 2b	2. 40 2. 41	6. 98 6. 89	3½-2½ 2½-1½?	b ²F-v ²D° (68)	2853. 66 2821. 09	A A	2b 1b	3. 85 3. 76	8. 17 8. 13	2½-3½ 1½-2½	z ²D°-e ²F (81)
2609. 74 2662. 57	A A	5 3	2. 40 2. 41	7. 13 7. 04	3½-3½ 2½-2½	b ²F-v ²F° (69)	2306. 78 2302. 52	A A	2b 2b	3. 85 3. 76	9. 20 9. 12	2½-3½ 1½-2½	z ²D°-f ²F (82)
2739. 77 2760. 10	A A	1 3b	2. 48 2. 42	6. 98 6. 89	1½-2½ 0½-1½?	b ²P-v ²D° (70)	2931. 89 2886. 71 2946. 30	A A A	3b 3b 1b	4. 34 4. 26 4. 34	8. 55 8. 53 8. 53	4½-4½ 3½-3½ 4½-3½	z ²G°-e ²G (83)
2703. 25	A	3	2. 48	7. 04	1½-2½	b ²P-v ²F° (71)	2543. 04 2539. 37	A A	3b 2	4. 34 4. 26	9. 20 9. 12	4½-3½ 3½-2½	z ²G°-f ²F (84)
2392. 66 2426. 38 2454. 21 2366. 22	A A A A	10 7 4 3	2. 48 2. 42 2. 48 2. 42	7. 64 7. 51 7. 51 7. 64	1½-1½ 0½-0½ 1½-0½ 0½-1½	b ²P-v ²P° (72)	2067. 08 2051. 21 2037. 58	A A A	4 4 1	4. 34 4. 26 4. 26	10. 31 10. 27 10. 31	4½-4½ 3½-3½ 3½-4½	z ²G°-g ²G (85)
2726. 99 *2807. 13	A A	3b 3b	3. 11 3. 11	7. 64 7. 51	0½-1½ 0½-0½	a ²S-v ²P° (73)	2350. 91 2364. 58	A A	3 2	4. 66 4. 61	9. 91 9. 83	3½-4½ 2½-3½	y ²F°-f ²G (86)
2931. 08 2895. 32 2859. 61 2806. 68 2851. 28 2819. 31 2785. 90 2747. 66	A A A A A A A	8bl 6bl 4b 5 31 4b 1b	3. 80 3. 68 3. 57 3. 45 3. 68 3. 57 3. 45 3. 45	8. 01 7. 95 7. 88 7. 85 8. 01 7. 95 7. 88 7. 95	5½-4½ 4½-3½ 3½-2½ 2½-1½ 4½-4½ 3½-3½ 2½-2½ 2½-3½	z ⁴G°-e ⁴F (74)	2903. 70 2884. 57 2941. 55 2786. 95 2776. 59 2829. 38 2026. 61 2029. 87 2057. 96 2000. 07	A A A A A A A	15bl 7b 1 6bl 3b 0 5b 3b 1b 1b	5. 24 5. 15 5. 24 5. 24 5. 24 5. 15 5. 24 5. 24 5. 24 5. 15	9. 49 9. 43 9. 43 9. 43 9. 43 9. 66 9. 60 11. 32 11. 23 11. 23 11. 32	5½-6½ 4½-5½ 5½-5½ 5½-5½ 5½-5½ 5½-5½ 5½-5½ 5½-5½ 5½-5½ 5½-5½	z ²H°-e ²I (88)
2182. 81 2165. 24 2152. 89 2144. 01 2122. 41	A A A A A	5b 4b 4b 4b 1	3. 80 3. 68 3. 57 3. 45 3. 57	9. 46 9. 38 9. 30 9. 21 9. 38	5½-4½ 4½-3½ 3½-2½ 2½-1½ 3½-3½	z ⁴G°-f ⁴F (75)							z ²H°-f ²H (90)

Strongest Unclassified Lines of Zr II

Zr III

J P 247 Anal B List B December 1951

REFERENCES

- A C. C. Kiess, unpublished material (December 1951). W L, I, T, I P
B R. J. Lang, see C. C. Kiess and R. J. Lang, Bur. Std. J. Research 5, 309, RP202 (1930). W L, (I), T

Zr III

Zr III

Zr III—Continued

Zr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 822.11	B	(14)	0.71	15.72	2-3	$a^1D - y^1F^o$ (13)	Air 2643.79	A	125	2.41	7.08	3-3	$a^1D - z^1D^o$ (26)
812.09	B	(15)	0.71	15.91	2-2	$a^1D - y^1D^o$ (14)	2656.46	A	75	2.32	6.97	2-2	
Air 2231.00	A	30	1.09	6.62	2-2	$a^3P - z^1D^o$ (15)	2686.28	A	50	2.27	6.87	1-1	
2116.30	A	18	1.09	6.92	2-3	$a^3P - z^3F^o$ (16)	2709.05	A	40	2.41	6.97	3-2	
2116.63	A	18	1.03	6.86	1-2		2715.76	A	35	2.32	6.87	2-1	
2139.85	A	10	1.09	6.86	2-2		2593.65	A	100	2.32	7.08	2-3	
2060.83	A	50	1.09	7.08	2-3	$a^3P - z^3D^o \dagger$ (17)	2628.26	A	60	2.27	6.97	1-2	
2077.92	A	60	1.03	6.97	1-2		2448.86	A	100	2.41	7.45	3-2	$a^3D - z^3P^o$ (27)
2102.30	A	40	1.00	6.87	0-1		2444.57	A	50	2.32	7.37	2-1	
Vac 1941.09	A	55	1.09	7.45	2-2	$a^3P - z^3P^o$ (18)	2406.21	A	40	2.27	7.40	1-0	
1946.62	A	40	1.03	7.37	1-1		2405.81	A	35	2.32	7.45	2-2	
1966.25	A	50	1.09	7.37	2-1		2420.65	A	75	2.27	7.37	1-1	
1937.27	A	35	1.03	7.40	1-0		2382.65	A	8	2.27	7.45	1-2	
1921.97	A	40	1.03	7.45	1-2		2308.12	A	75	2.32	7.67	2-1	$a^3D - z^1P^o$ (28)
1936.65	A	30	1.00	7.37	0-1		Vac 1612.38	A	35	2.41	10.07	3-2	$a^3D - y^1P^o \dagger$ (29)
1877.06	A	25	1.09	7.67	2-1	$a^3P - z^1P^o \dagger$ (19)	1631.32	A	25	2.32	9.89	2-1	
Air 2220.25	A	18	1.36	6.92	4-3	$a^1G - z^3F^o \dagger$ (20)	1638.32	A	30	2.27	9.81	1-0	
2159.24	A	22	1.36	7.08	4-3	$a^1G - z^3D^o$ (21)	2002.00	A	55	6.62	12.79	2-3	$z^1D^o - e^1F$ (32)
Vac 1940.20	A	100	1.36	7.73	4-3	$a^1G - z^1F^o$ (22)	2080.99	A	75	7.12	13.05	4-5	$z^1F^o - e^3G \dagger$ (33)
Air 2070.43	A	100	1.71	7.67	0-1	$a^1S - z^1P^o ?$ (23)	2035.42	A	60	6.92	12.99	3-4	
2869.06	A	20	2.32	6.62	2-2	$a^3D - z^1D^o$ (24)	2036.92	A	25	6.86	12.92	2-3	
2836.18	A	25	2.27	6.62	1-2		2056.13	A	25	7.12	13.12	4-3	$z^1F^o - e^3D \dagger$ (34)
2620.56	A	150	2.41	7.12	3-4	$a^3D - z^3F^o$ (25)	2029.94	A	10	6.92	13.00	3-2	
2682.16	A	85	2.32	6.92	2-3		Vac 2000.23	A	45	6.86	13.03	2-1	$z^1F^o - e^1P$ (35)
2690.49	A	60	2.27	6.86	1-2		1974.99	A	50	7.12	13.37	4-4	$z^1F^o - e^3F \dagger$ (36)
2735.76	A	40	2.41	6.92	3-3		1932.54	A	25	6.92	13.31	3-3	
2720.06	A	30	2.32	6.86	2-2		1934.34	A	12	6.86	13.24	2-2	
2775.28	A	20	2.41	6.86	3-2		Air 2162.20	A	30	7.08	12.79	3-3	$z^3D^o - e^1F$ (37)

Zr III—Continued

Zr III—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2089. 50 2074. 12 2114. 10	A A A	22 25 35d	7. 08 6. 97 7. 08	12. 99 12. 92 12. 92	3-4 2-3 3-3	$z^1D^o - e^1G$ (38)	Air 2301. 60	A 2252. 37	100 20	7. 67 7. 67	13. 03 13. 15	1-1 1-2	$z^1P^o - e^1P$ (42) $z^1P^o - e^1D$ (43)
Vac 1962. 03 1946. 11 1936. 48	A A A	40 12 10	7. 08 6. 97 6. 87	13. 37 13. 31 13. 24	3-4 2-3 1-2	$z^1D^o - e^1F^\dagger$ (39)	2195. 44	A	30	7. 67	13. 29	1-0	$z^1P^o - e^1S$ (44)
Air 2175. 83 2191. 15 2218. 48 2206. 33	A A A A	100 100 15 60	7. 45 7. 37 7. 40 7. 37	13. 12 13. 00 12. 96 12. 96	2-3 1-2 0-1 1-1	$z^1P^o - e^1D^\dagger$ (40)	2438. 70 2228. 10	A A	25 20	7. 73 7. 73	12. 79 13. 27	3-3 3-4	$z^1F^o - e^1F$ (45) $z^1F^o - e^1G$ (46)
2192. 05	A	35	7. 40	13. 03	0-1	$z^1P^o - e^1P^\dagger$ (41)							

Zr IV

IP 33.83 Anal B List A March 1951

REFERENCE

A C. C. Kiess and R. J. Lang, Bur. Std. J. Research 5, 307, RP202 (1930). W L, I, T, IP

Zr IV

Zr IV

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Vac 1201. 76 1219. 85 1183. 98	A A A	50 45 25	0. 15 0. 00 0. 00	10. 43 10. 12 10. 43	$2\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-0\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$4d^2D - 5p^2P^o$ (1)	Vac 1599. 00 1546. 21 1608. 02	A A A	30 20 4	10. 43 10. 12 10. 43	18. 15 18. 10 18. 10	$1\frac{1}{2}-2\frac{1}{2}$ $0\frac{1}{2}-1\frac{1}{2}$ $1\frac{1}{2}-1\frac{1}{2}$	$5p^1P^o - 5d^2D$ (4)
633. 56 628. 66	A A	30 20	0. 15 0. 00	19. 64 19. 64	$2\frac{1}{2}-3\frac{1}{2}$ $1\frac{1}{2}-2\frac{1}{2}$	$4d^2D - 4f^2F^o$ (2)	1469. 55 1417. 78	A A	15 5	10. 43 10. 12	18. 83 18. 83	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5p^1P^o - 6s^2S$ (5)
Air 2163. 62 2286. 66	A A	15 15	4. 72 4. 72	10. 43 10. 12	$0\frac{1}{2}-1\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5s^2S - 5p^2P^o$ (3)	874. 29 855. 69	A A	10 4	10. 43 10. 12	24. 55 24. 55	$1\frac{1}{2}-0\frac{1}{2}$ $0\frac{1}{2}-0\frac{1}{2}$	$5p^1P^o - 7s^2S$ (6)

NIOBIUM, Z=41

Nb I

I P 6.74 Anal A List C August 1951

REFERENCE

A C. J. Humphreys and W. F. Meggers, J. Research Nat. Bur. Std. 34, 515, RP1656 (1945). W L, I, T

Nb I

Nb I

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air							Air						
*2453.367	A	20	0.05	5.08	2½-3½	a ⁴D-411° (1)	2627.435	A	60	0.35	5.04	4½-4½	a ⁴F-r ⁴F°† (11)
2981.636	A	15	0.35	4.49	4½-3½	a ⁴F-u ⁴D°† (2)	2616.476	A	30	0.27	4.98	3½-3½	
2938.067	A	15	0.27	4.47	3½-2½		2558.936	A	20	0.14	4.96	1½-2½	
2903.650	A	10	0.20	4.45	2½-1½		2592.190	A	50	0.35	5.11	4½-5½	a ⁴F-s ⁴G°† (13)
2874.564	A	15	0.14	4.43	1½-0½		2578.734	A	50	0.27	5.05	3½-4½	
2924.824	A	10	0.27	4.49	3½-3½		2565.410	A	30	0.20	5.01	2½-3½	
2889.898	A	10	0.20	4.47	2½-2½		2567.510	A	20	0.14	4.95	1½-2½	
2854.168	A	12	0.35	4.67	4½-4½	a ⁴F-t ⁴F°† (3)	2597.138	A	10	0.20	4.95	2½-2½	
2825.180	A	10	0.27	4.63	3½-3½		*2524.985	A	10	0.14	5.03	1½-2½	a ⁴F-q ⁴F°† (14)
2800.315	A	10	0.20	4.60	2½-2½		*2524.985	A	10	0.27	5.15	3½-2½	a ⁴F-q ⁴F°† (15)
2859.962	A	15	0.35	4.66	4½-5½	a ⁴F-u ⁴G°† (4)	2504.648	A	30	0.35	5.27	4½-3½	a ⁴F-r ⁴D°† (16)
2826.47	A	12	0.27	4.63	3½-4½		2474.655	A	15	0.27	5.25	3½-2½	
2840.929	A	10	0.27	4.61	3½-3½		2453.084	A	20	0.20	5.23	2½-1½	
*2808.050	A	10	0.20	4.59	2½-2½		2466.318	A	10	0.14	5.15	1½-0½	
2773.197	A	50	0.35	4.80	4½-3½	a ⁴F-t ⁴D°† (5)	2464.432	A	10	0.27	5.27	3½-3½	
2758.605	A	50r	0.27	4.74	3½-2½		2466.727	A	20	0.35	5.35	4½-3½	a ⁴F-q ⁴D°† (17)
2748.848	A	30r	0.20	4.69	2½-1½		2469.072	A	25	0.27	5.26	3½-2½	
2746.910	A	30r	0.14	4.63	1½-0½		*2445.066	A	20	0.20	5.24	2½-1½	
2723.986	A	15	0.27	4.80	3½-3½		2461.757	A	10	0.35	5.36	4½-3½	a ⁴F-p ⁴D°† (18)
2716.100	A	15	0.20	4.74	2½-2½		2436.329	A	10	0.27	5.33	3½-2½	
2755.632	A	10	0.20	4.67	2½-1½	a ⁴F-t ⁴D°† (6)	2462.889	A	20	0.35	5.36	4½-4½	a ⁴F-p ⁴F°† (19)
2687.149	A	30r	0.35	4.94	4½-4½	a ⁴F-s ⁴F°† (7)	2446.130	A	10	0.27	5.31	3½-2½	
2668.283	A	40r	0.27	4.89	3½-3½		*2453.367	A	20	0.35	5.38	4½-3½	a ⁴F-n ⁴F°† (20)
2654.446	A	60R	0.20	4.85	2½-2½		2247.997	A	80	0.35	5.84	4½-3½	a ⁴F-n ⁴D°† (21)
2647.500	A	80R	0.14	4.80	1½-1½		2238.518	A	80c	0.27	5.78	3½-2½	
2695.038	A	30	0.27	4.85	3½-2½		*2232.545	A	80c	0.20	5.72	2½-1½	
2679.015	A	20	0.20	4.80	2½-1½		2229.65	A	30	0.14	5.68	1½-0½	
2640.918	A	20	0.27	4.94	3½-4½		2215.54	A	30c	0.27	5.84	3½-3½	
2628.493	A	20	0.20	4.89	2½-3½		2257.886	A	160	0.35	5.81	4½-5½	a ⁴F-r ⁴G°† (22)
2623.507	A	25	0.14	4.85	1½-2½		2242.958	A	20	0.27	5.77	3½-4½	
2763.380	A	15	0.35	4.81	4½-3½	a ⁴F-u ⁴G°† (8)	2227.280	A	10	0.20	5.74	2½-3½	
2682.129	A	10	0.27	4.87	3½-3½	a ⁴F-t ⁴G°† (9)	*2228.032	A	100c	0.14	5.68	1½-2½	
2653.372	A	10	0.35	5.00	4½-5½	a ⁴F-t ⁴G°† (10)	2250.308	A	100c	0.20	5.68	2½-2½	
2612.377	A	15	0.27	4.99	3½-4½								
2610.268	A	20	0.20	4.92	2½-3½								
2657.613	A	40r	0.35	4.99	4½-4½								
2649.515	A	50r	0.27	4.92	3½-3½								
2634.704	A	10	0.20	4.88	2½-2½								

Nb I—Continued

Nb I—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 1227. 706 1228. 032 1223. 672 1220. 184 1220. 854 1242. 294	A A A A A A	150c 100c 60c 70c 20 20	0.37 0.27 0.20 0.14 0.35 0.20	5.89 5.80 5.75 5.70 5.80 5.70	4½-4½ 3½-3½ 2½-2½ 1½-1½ 4½-3½ 2½-1½	a 4F -o 4F°† (23)	Air 2782. 356 2755. 288 2741. 146 2656. 984 2569. 030 2583. 103	A A A A A A	20 20 10 10 20 15	1.15 1.09 1.09 1.15 1.15 1.09	5.59 5.57 5.59 5.80 5.96 5.87	4½-5½ 3½-4½ 3½-2½ 4½-4½ 4½-4½ 3½-3½	a 2G -u 2H° (28) a 2G -m 2F° (29) a 2G -t 2H°† (30) a 2G -o 2G°† (31)
1254. 564 1232. 545 1225. 343 1204. 617	A A A A	150 80c 50 12	0.35 0.27 0.20 0.20	5.82 5.79 5.74 5.79	4½-4½ 3½-3½ 2½-2½ 2½-3½	a 4F -n 4F°† (24)	2851. 446 *2808. 050 2884. 968 *2851. 978	A A A A	20 10 12 15	1.26 1.40 1.54 1.49	5.59 5.79 5.82 5.82	2½-2½ 1½-2½ 5½-5½ 4½-5½	a 2D -m 2F°† (32) a 2P -469° (33) t 2H -t 2H° (34)
1048. 093 1053. 086 1987. 286 1965. 48	A A A A	20 10 15 10	0.74 0.74 0.65 0.62	4.79 4.78 4.79 4.78	2½-2½ 2½-1½ 1½-2½ 0½-1½	a 4P -w 4P°† (25)	2851. 446 *2808. 050 2884. 968 *2851. 978	A A A A	20 10 12 15	1.26 1.40 1.54 1.49	5.59 5.79 5.82 5.82	2½-2½ 1½-2½ 5½-5½ 4½-5½	a 2D -m 2F°† (32) a 2P -469° (33) t 2H -t 2H° (34)
1851. 978	A	15	1.09	5.42	3½-3½	a 2G -q 2G° (27)							

Strongest Unclassified Lines of Nb I

Air 2864. 324 2836. 245 2819. 215 2554. 103 2368. 860 2344. 517 2337. 744	A A A A A A A	20 30 15 12 15 15c 20c					Air 2277. 426 2246. 176 2226. 927 2217. 872 2214. 034 2211. 46	A A A A A A	15 90c 15 15 40c 50c					
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Nb II

IP 14± Anal A List C August 1951

REFERENCE

A C. J. Humphreys and W. F. Meggers, J. Research Nat. Bur. Std. 34, 481, RP1656 (1945). WL, I, T

Nb II

Nb II

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 2849. 557 2768. 124 2865. 609	A A A	100c 100rs 60	0.05 0.05 0.00	4.39 4.51 4.31	2-2 2-3 0-1	a 4D-z 4D°† (1)	Air 2571. 324 2541. 424	A A	60 50	0.15 0.15	4.95 5.01	4-5 4-4	a 4D-z 4G°† (4)
2716. 630 2721. 987 2737. 083	A A A	150rs 150rs 60	0.15 0.10 0.05	4.69 4.63 4.56	4-5 3-4 2-2	a 4D-z 4F°† (2)	2285. 223 2334. 802 2372. 730	A A A	60 100 60	0.15 0.10 0.00	5.55 5.38 5.20	4-4 3-2 0-1	a 4D-z 4F°† (5)
2697. 067 2671. 933 2675. 945 2702. 197 2698. 866 2691. 774 2686. 595 2646. 258 2656. 076	A A A A A A A A A	200Rs 200rs 80rs 60rs 100rs 60rs 50 200rs 80rs	0.15 0.10 0.05 0.10 0.05 0.02 0.10 0.05 0.22	4.73 4.72 4.67 4.67 4.63 4.60 4.73 4.72 4.67	4-4 3-3 2-2 3-2 2-1 1-0 3-4 2-3 1-2	a 4D-z 4D°† (3)	2376. 398 2352. 837 2280. 450	A A A	100 60 50	0.10 0.10 0.10	5.29 5.34 5.51	3-4 3-2 3-3	a 4D-z 4H° (7)
													a 4D-y 4D°† (8)

Nb II—Continued

Nb II—Continued

I A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)							
			Low	High						Low	High									
Air							Air													
2295. 681	A	300	0. 15	5. 53	4 3	$a ^3D - z ^3P^o$ (9)	2556. 933	A	120	0. 90	5. 72	2-1	$a ^3P - z ^3S^o \dagger$ (23)							
2302. 086	A	200	0. 10	5. 46	3-2		2352. 338	A	60	0. 90	6. 14	2-3	$a ^3P - x ^3D^o \dagger$ (24)							
2324. 237	A	60	0. 05	5. 36	2-1		2321. 996	A	30	0. 76	6. 08	1-2								
2273. 566	A	150	0. 10	5. 53	3 3		*2356. 290	A	50	0. 90	6. 13	2-1								
2283. 004	A	300	0. 05	5. 46	2-2		2346. 532	A	50	0. 90	6. 16	2-3	$a ^3P - w ^3D^o \dagger$ (25)							
2309. 239	A	100	0. 02	5. 36	1-1		2314. 850	A	50	0. 90	6. 23	2-2	$a ^3P - x ^3P^o$ (26)							
2254. 953	A	60	0. 05	5. 53	2-3		2257. 537	A	60	0. 76	6. 23	1-1								
2268. 527	A	150	0. 02	5. 46	1-2															
2300. 785	A	50	0. 00	5. 36	0-1															
2265. 676	A	100	0. 10	5. 55	3-2	$a ^3D - z ^3P^o \dagger$ (10)	2810. 810	A	100	1. 03	4. 72	4-3	$a ^3F - z ^3D^o \dagger$ (27)							
2236. 724	A	60	0. 15	5. 67	4-3	$a ^3D - y ^3G^o \dagger$ (11)	2680. 061	A	50	1. 03	5. 63	4-4	$a ^3F - y ^3G^o \dagger$ (28)							
2242. 58	A	50	0. 15	5. 65	4-3	$a ^3D - z ^1F^o$ (12)	3028. 436	A	300c	0. 44	4. 51	4-3	$a ^3F - z ^3I^o \dagger$ (13)							
							3076. 864	A	200	0. 37	4. 39	3-2								
							3099. 180	A	100	0. 32	4. 31	2-1								
							2982. 100	A	100	0. 37	4. 51	3-3								
							3073. 232	A	50	0. 29	4. 31	1-1								
							2946. 890	A	80	0. 32	4. 51	2-3								
							2950. 876	A	800R	0. 51	4. 69	5-5	$a ^3F - z ^3F^o \dagger$ (14)							
							2941. 536	A	500cR	0. 44	4. 63	4-4	2437. 411	A	50	0. 93	5. 99	2-1	$a ^3F - z ^1P^o$ (31)	
							2910. 580	A	400R	0. 37	4. 61	3-3	2412. 460	A	150	1. 03	6. 14	4-3	$a ^3F - x ^3D^o \dagger$ (32)	
							2911. 740	A	200R	0. 32	4. 56	2-2	2369. 954	A	100	0. 93	6. 13	2-1		
							2908. 236	A	200r	0. 29	4. 53	1-1	2387. 521	A	80	0. 98	6. 14	3-2	$a ^3F - w ^3D^o$ (33)	
							2994. 725	A	300c	0. 51	4. 63	5-4	2365. 215	A	70	0. 93	6. 14	2-2		
							2946. 110	A	60	0. 37	4. 56	3-2	2274. 128	A	100	1. 03	6. 45	4-4	$a ^3F - v ^3F^o \dagger$ (34)	
							2931. 458	A	70	0. 32	4. 53	2-1	2270. 180	A	150	0. 98	6. 41	3-3		
							2899. 230	A	200r	0. 44	4. 69	4-5	2250. 463	A	100h	0. 93	6. 41	2-2		
							2897. 803	A	200R	0. 37	4. 63	3-4								
							2877. 026	A	200cR	0. 32	4. 61	2-3								
							2888. 824	A	150r	0. 29	4. 56	1-2								
							2927. 804	A	600cR	0. 51	4. 73	5-4	$a ^3F - z ^3D^o \dagger$ (15)							
							2883. 168	A	300cR	0. 44	4. 72	4-3								
							2875. 386	A	300cR	0. 37	4. 67	3-2	2791. 742	A	80	1. 21	5. 63	5-4	$a ^3H - y ^3G^o \dagger$ (35)	
							2868. 524	A	300R	0. 32	4. 63	2-1	2745. 725	A	40	1. 17	5. 67	4-3		
							2861. 091	A	100	0. 29	4. 60	1-0	2740. 185	A	100	1. 21	5. 72	5-4	$a ^3H - y ^3F^o \dagger$ (36)	
							2876. 951	A	150	0. 44	4. 73	4-4	2590. 940	A	200R	1. 26	6. 02	6-6	$a ^3H - y ^3H^o \dagger$ (37)	
							2841. 141	A	80c	0. 37	4. 72	3-3	2583. 982	A	250R	1. 21	5. 99	5-5		
							2842. 642	A	100r	0. 32	4. 67	2-2	2642. 233	A	150rs	1. 17	5. 84	4-4		
							2846. 280	A	60	0. 29	4. 63	1-1	2555. 626	A	60	1. 17	6. 00	4-4	$a ^3H - w ^3F^o \dagger$ (38)	
							2835. 106	A	50	0. 37	4. 73	3-4	2601. 285	A	100	1. 26	6. 00	6-6	$a ^3H - z ^3I^o \dagger$ (39)	
							2780. 235	A	150c	0. 51	4. 95	5-5	$a ^3F - z ^3G^o \dagger$ (16)	2521. 404	A	150	1. 17	6. 07	4-4	$a ^3H - y ^3G^o \dagger$ (40)
							2793. 044	A	80	0. 44	4. 86	4-4	2479. 933	A	80	1. 26	6. 23	6-5	$a ^3H - x ^3G^o \dagger$ (41)	
							2126. 54	A	60	0. 44	6. 24	4-4	2435. 952	A	50	1. 21	6. 28	5-4		
							2255. 597	A	200	0. 32	5. 80	2-3	2433. 792	A	60	1. 17	6. 24	4-3		
							2272. 730	A	100	0. 29	5. 72	1-2	2354. 040	A	50	1. 21	6. 45	5-4	$a ^3H - v ^3F^o$ (42)	
							2210. 534	A	50	0. 37	5. 96	3-4	*2356. 290	A	50	1. 17	6. 41	4-3	$a ^3H - w ^3G^o$ (43)	
							2131. 18	A	60	0. 32	6. 12	2-2	2229. 716	A	150h	1. 26	6. 79	6-5		
							2125. 21	A	60	0. 37	6. 18	3-3	2240. 65	A	50h	1. 21	6. 72	5-4		
							2113. 08	A	50	0. 44	6. 28	4-4	2262. 132	A	80	1. 17	6. 63	4-3		
							2544. 802	A	200R	0. 90	5. 75	2-2	$a ^3P - y ^3P^o$ (22)							
							2551. 382	A	120	0. 76	5. 60	1-1		2974. 094	A	400rs	1. 35	5. 50	5-6	$a ^3G - z ^3H^o \dagger$ (44)
							2562. 402	A	120	0. 76	5. 58	1-0		3032. 767	A	400rs	1. 31	5. 38	4-5	
							2477. 379	A	150	0. 76	5. 75	1-2		3064. 530	A	250r	1. 26	5. 29	3-4	
							2511. 004	A	120	0. 69	5. 60	0-1								

Nb II—Continued

Nb II—Continued

A	Ref	Int	E P		J	Multiplet (No)	I A	Ref	Int	E P		J	Multiplet (No)
			Low	High						Low	High		
Air 0. 712	A	100	1. 35	5. 63	5-4	$a^3G - y^3G^\circ \dagger$ (45)	Air 2985. 04	A	50	1. 61	5. 75	3-2	$a^3D - y^3P^\circ \dagger$ (58)
1. 122	A	80	1. 35	6. 00	5-4	$a^3G - w^3F^\circ \dagger$ (46)	2715. 882	A	40	1. 61	6. 16	3-3	$a^3D - w^3D^\circ \dagger$ (59)
7. 765	A	35	1. 31	5. 94	4-3		2730. 324	A	60	1. 62	6. 14	1-1	
5. 247	A	80	1. 26	5. 90	3-2								
5. 806	A	100	1. 35	6. 23	5-5	$a^3G - x^3G^\circ \dagger$ (47)	2540. 611	A	80	1. 81	6. 67	2-3	$b^3P - v^3D^\circ \dagger$ (60)
3. 878	A	50	1. 31	6. 28	4-4		2530. 968	A	80	1. 81	6. 68	1-2	
8. 283	A	60	1. 26	6. 24	3-3								
2. 047	A	60	1. 26	6. 28	3-4								
6. 994	A	150	1. 35	6. 45	5-4	$a^3G - v^3F^\circ \dagger$ (48)	2908. 88	A	80	1. 83	6. 07	4-4	$a^1G - y^1G^\circ$ (61)
8. 687	A	150	1. 31	6. 41	4-3								
8. 484	A	120	1. 26	6. 41	3-2								
6. 732	A	100	1. 35	6. 79	5-5	$a^3G - w^3G^\circ \dagger$ (49)	2360. 302	A	80	1. 83	7. 05	4-4	$a^1G - x^1G^\circ$ (62)
1. 136	A	30	1. 31	6. 72	4-4								
7. 611	A	50	1. 35	6. 72	5-4								
9. 589	A	25	1. 31	6. 63	4-3								
2. 568	A	200c	1. 40	5. 55	3-4	$a^3P - y^3D^\circ$ (50)	2753. 133	A	200c	1. 90	6. 38	6-6	$a^1I - z^1I^\circ$ (63)
4. 735	A	250	1. 34	5. 42	2-3		2673. 566	A	250rs	1. 90	6. 52	6-5	$a^1I - y^1H^\circ$ (64)
1. 55	A	90c	1. 40	5. 42	3-3								
9. 528	A	40c	1. 34	5. 38	2-2								
5. 76	A	50	1. 32	5. 20	1-1								
7. 115	A	60c	1. 40	5. 38	3-2								
4. 27	A	30c	1. 34	5. 20	2-1		2252. 210	A	250	1. 98	7. 46	5-5	$b^3G - v^3G^\circ \dagger$ (65)
9. 65	A	60	1. 32	5. 26	1-0		2264. 556	A	150	1. 97	7. 42	4-4	
0. 28	A	200c	1. 40	5. 53	3-3	$a^3P - z^3P^\circ$ (51)	2274. 198	A	60	1. 92	7. 35	3-3	
3. 97	A	20c	1. 34	5. 46	2-2		2269. 865	A	100	1. 98	7. 42	5-4	
8. 21	A	80c	1. 32	5. 36	1-1		2294. 983	A	60	1. 97	7. 35	4-3	
9. 818	A	150c	1. 40	5. 46	3-2								
5. 26	A	100c	1. 34	5. 36	2-1								
5. 890	A	100c	1. 34	5. 53	2-3		2715. 344	A	50	2. 00	6. 55	4-3	$b^1G - y^1F^\circ$ (66)
7. 67	A	150c	1. 32	5. 46	1-2								
1. 956	A	80	1. 32	5. 44	1-1	$a^3P - z^3P^\circ \dagger$ (52)							
7. 050	A	100	1. 32	5. 55	1-2								
7. 693	A	100c	1. 40	5. 81	3-2	$a^3P - z^3S^\circ$ (53)	3022. 738	A	200	2. 15	6. 23	6-5	$b^3H - x^3G^\circ \dagger$ (67)
8. 78	A	50c	1. 34	5. 81	2-2		2978. 943	A	80	2. 13	6. 28	5-4	
4. 97	A	30c	1. 32	5. 81	1-2		3018. 853	A	100	2. 16	6. 24	4-3	
5. 850	A	60c	1. 34	6. 47	2-2	$a^3P - w^3P^\circ \dagger$ (54)							
5. 344	A	50c	1. 32	6. 45	1-1		2686. 388	A	100	2. 28	6. 88	3-2	$a^1F - x^1D^\circ$ (68)
7. 101	A	80	1. 34	6. 51	2-3	$a^3P - 527^\circ \dagger$ (55)							
							2979. 875	A	80	2. 65	6. 79	4-5	$c^3F - w^3G^\circ \dagger$ (69)
							3001. 125	A	50	2. 61	6. 72	3-4	
							3025. 372	A	40	2. 55	6. 63	2-3	
0. 717	A	150	1. 51	5. 65	2-3	$a^1D - z^1F^\circ$ (56)							
1. 870	A	60	1. 51	6. 55	2-3	$a^1D - y^1F^\circ$ (57)	2771. 398	A	50	2. 60	7. 05	5-4	$a^1H - x^1G^\circ$ (70)

Strongest Unclassified Lines of Nb II

Air 1. 85	A	150					Air 2203. 64	A	100h				
7. 707	A	100					2160. 27	A	100				
1. 830	A	80h					2109. 43	A	150				
7. 496	A	100											